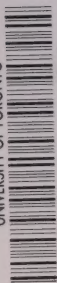


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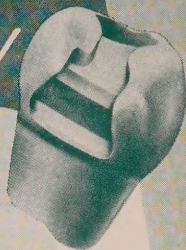
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Journal

OF THE CANADIAN DENTAL ASSOCIATION

The temporo-mandibular joint*

Its Component Parts, Its Derangements and their Treatment.

An Article in Two Parts—Part I.

by ALBERT A. ANTONI, D.D.S., Toronto

I. INTRODUCTION.

In the last five years dental literature has become replete with articles on the temporo-mandibular joint and its many afflictions. The oral surgeon, prosthodontist, orthodontist, radiologist, otolaryngologist and periodontist have all contributed to developing a better understanding of the physiology and pathology of this relatively complex joint. There are necessarily many differences of opinion but it is significant to note that in the actual handling of temporo-mandibular joint disorders, the most beneficial results are obtained through co-operation of the different specialists concerned.

II. REVIEW OF THE LITERATURE

Costen ⁽¹⁾, an otolaryngologist, stimulated thought and study in the problem

when he recorded the symptoms, the etiology (as he saw it) and the diagnosis of the syndrome which today bears his name. This is a symptom-complex related to dysfunction of the temporomandibular joint.

Altogether Costen published three reports, the first was in 1934 which gave a series of symptoms and their causes and diagnosis.

A summary of the symptoms is as follows:—

1. Impaired hearing.
2. "Stuffy" sensations in the ears.
3. Tinnitus.
4. Snapping noise in the mandibular joint while chewing.
5. Dull pain in and about the ears.
6. Dizziness, relieved by inflation of the Eustachian tubes.
7. Headache.
8. Glossodynia.

He maintained that there was a compression of the Eustachian tube through "relaxation" of the upper head of the lateral pterygoid muscle, when the condyle is in position of marked overbite.

*A Thesis submitted in partial fulfilment of the requirements for the Degree of Master of Science in Dentistry in the Department of Oral Surgery Faculty of Dentistry, U. of T. April, 1954.

He also claimed that a bunching of soft tissues against the Eustachian tube, during swallowing closed the tube and was responsible for the impaired hearing, and that a slipping of the condyle medially, irritated the chorda tympani and so caused the glossodynia associated with the syndrome.

His second report published in 1936 was actually a progress report on a number of patients. In this report however, he does claim that "the sphenomandibular, stylomandibular and temporo-mandibular ligaments make up the capsule of the joint and control the normal opening of the jaw."

A further report in 1944 stressed secondary or reflex neuralgias and associated them with movements of the mandible. In this report, Costen stated that as a rule "complete loss of molars invites destruction of the mandibular joint".

Since Costen's first publications, most of his observations and theories have been questioned. Some have been doubted and some have been proven erroneous. Nevertheless, much credit is due him, and his work deserves just consideration and respect. It is of interest to know that Costen's group is still actively engaged in the study of the problem. Recent research by them, has disclosed that there are pain fibers in the chorda tympani.

Zimmerman⁽²⁾ maintains that only trigeminal and occipital neuralgia are possible true symptoms in Costen's syndrome, and explains it by the theory of referred pain. "This is a central phenomenon, with one peripheral source of irritation but with other simulated or referred manifestations of pain in other peripheral areas, which are supplied by branches of the same nerve, or by other nerves closely related at their origin or termination". On the premise therefore that neuro-connections exist, we can then contend that facial, temporal, vertex and occipital neuralgias are possible in conditions of serious temporo-mandibular joint disturbances.

Costen⁽¹⁾ maintained that the abnor-

mal and backward motions of the condyles are the cause of the various pains observed. Henny⁽³⁾ feels that the postero-superior positioning of the condyle head is largely a misinterpretation of roentgenograms. He feels that radiographic evidence alone is not sufficient to justify an attempt to increase vertical dimension; there must also be definite clinical evidence of bite closure. Frey⁽⁴⁾ says that pain in the temporal area is due to irritation of the auriculo-temporal nerve. Pringle⁽⁵⁾ claims that irritation of the dura mater through the thinned roof of the glenoid cavity causes pains occurring in the vertex, and the erosion of the tympanic bone causes irritation of the chorda tympani. Thus, he explains the glossodynia sometimes associated with the temporo-mandibular joint syndrome. Sicher⁽⁶⁾ does not agree with these interpretations and points out that because the auriculo-temporal nerve is inferior to the neck of the condyle before it turns laterally and upwards, and since the chorda-tympani is protected in the trough of the petrotympanic fissure as it travels medially to round the spine of the sphenoid, then it must necessarily follow that compression of these two structures is anatomically impossible. Vertex pain is unlikely to be of dural origin. If there was irritation of the dura through the thinned roof of the glenoid fossa, then one would expect a thickening of the bone on the brain side of the roof as a result of the stimulus of the pressure causing the irritation.

Dechaume, Poggioli and Rouot⁽⁷⁾ maintain "that only a disturbance of the sympathetic nervous system can explain both the articular difficulties and the associated disorders". These workers emphasize the co-existence of some dental disorder on the one hand, and a disturbed physiology of the joint on the other. They claim that "all their patients benefited by correction of their occlusal discrepancies."

A study of the literature reveals that most investigators^(8,9,10,11,12) are agreed that the glenoid fossa, the neck of the

condyle, muscular tonus and action, all adapt to alterations in articulation of the teeth. There are some, however, ^(12,14) who believe that the joint is developed at 10 years of age and is independent of tooth form and arrangement. Miller ⁽¹⁵⁾ agrees with the majority, and maintains that more information about joint dysfunctions can be learned from their clinical symptoms than can be derived from roentgenograms. Both Henny ^(3,18) and the author agree with this in substance, but feel that it will be more correct to say that substantiation of clinical diagnosis by radiographic study is not generally well understood.

Miller ⁽¹⁵⁾ recognizes three types of joints, resultant on occlusal standards. The first type he associates with a shallow fossa, slight eminentia articularis, a flat condyle, an end to end occlusion, and good lateral and protrusive movements. This type is rarely involved in a joint derangement.

The second type involves an extremely deep fossa, very prominent eminentia, pronounced condyle head which fits deeply in the fossa, limited lateral excursion, prominent cusps and excessive overbite. This type appears most prone to temporo-mandibular derangement.

The third type is a modification of the first and second, and lies sometimes in between. In their paper entitled "Radiological Study of the Temporo-Mandibular Joints", Doub and Henny ⁽¹⁶⁾ also give three anatomical types which vary but slightly to those of Miller ⁽¹⁵⁾.

Centric Occlusion is recognized as the relation of the inclined planes of the teeth when the jaws are closed, and the inclined planes of the teeth are making a maximum contact, and *centric relation* as the correct closed position of the mandible as related to the maxilla regardless of tooth position. It is natural therefore to assume that as a result of wear, cuspal interference, habit, faulty restorations, injury, etc., we may get an **ACQUIRED CENTRIC OCCLUSION**.

With these three accepted definitions in

mind, Miller ⁽¹⁵⁾ drew up a list of eight factors which tend to cause temporo-mandibular joint symptoms:

(1) Whenever a patient has to adopt a new centric relation to accomplish centric occlusion, the condyle heads are thrown into abnormal positions.

(2) Whenever we have an unopposed tooth, there results elongation which leads to undue stress during movements in a horizontal plane.

(3) Teeth in linguo-version strike opponents in a lateral direction.

(4) Wherever an elongated tooth is not reduced before an opposing prosthesis is made, there is resultant pressure on the abutment teeth in a sidewise direction.

(5) In cases of excessive overbite with firm anterior teeth, the mandible is virtually wedged between the teeth and the temporo-mandibular joint cavities. The weaker of these two entities gives way and this is usually the temporo-mandibular joint.

(6) Wherever bruxism is present, detrimental conditions in the joint will result, if there is a pre-existing malocclusion.

(7) Whenever the mastication is unilateral, then the joint of the most used side will become affected.

(8) Any faulty habit that will create irritation of the joint could result in temporo-mandibular joint symptoms.

III. ANATOMY AND PHYSIOLOGY OF THE JOINT.

The temporo-mandibular joint is a ginglymo-artrodial joint. That is to say, it is a combination hinge joint with a free range of motion, in which a gliding motion and rotary motions are prominent features. The joint is formed by the mandibular condyle, the glenoid fossa and the articular eminence or tubercle of the temporal bone. A meniscus separates the joint into upper and lower joint cavities.

The glenoid fossa is formed by the posterior part of the zygomatic process of the temporal bone. It is limited anteriorly by the eminentia articularis.

The articular surface of the mandible is the upper and anterior surface of the

condyle. It, as well as the articular surfaces of the glenoid fossa and the articular eminence are normally covered by fibrocartilage arranged in layers. The inner-most layer immediately adjacent to the subchondral bone is hyaline cartilage, while the outermost zone is fibro-cartilage containing many fibers running parallel to the surface ⁽¹⁷⁾. The articular fibrocartilage is avascular and without nerve supply, except at the margins.

The meniscus, or articular disc, is a three-dimensional plate of dense connective (fibro-cartilage) tissue, with its long axis directed transversely. Bellinger et al ^(17,19,20) have shown that elastic fibers are demonstrable between the collagenous fibers, and that these provide additional shock absorbing properties to the joint. The meniscus is also avascular and without nerves, except in the peripheral portions. Bellinger ⁽¹⁷⁾ maintains that the "main function of the articular cartilage and the meniscus is the protection of the subchondral bone against abnormal and damaging stress". Another equally important function of the disc, of course, is the vital part it plays in mandibular movements. The meniscus fuses with the ARTICULAR CAPSULE except for its posterior border, which is attached to the capsule with loose vascularized and innervated connective tissue. The capsule encloses the joint. Above, it is attached posteriorly, laterally and medially to the margin of the glenoid fossa, and anteriorly, to the anterior surface of the articular eminence. Below, it is attached to the neck of the mandible, and between its upper and lower attachments it is connected to the meniscus.

The capsule is composed of external and internal layers. The external layer is dense connective tissue, while the inner layer is loosely textured connective tissue rich in cells, nerves and blood vessels. This inner layer provides the synovial fluid to the joint and is therefore referred to as the synovial membrane.

The inner layer which lines the upper cavity of the joint is of greater extent

and looseness than that of the lower compartment. This allows for free sliding motion in the upper compartment, and the lower snug attachment allows the meniscus to return to the fossa when the mouth is closed. ^(15,20,21,22,23).

The anatomical structures thus far mentioned are the ones affected by temporo-mandibular joint diseases; there are, nevertheless, other structures which go to complete the joint make-up. These are the temporo-mandibular, speno-mandibular and stylo-mandibular ligaments, and most important the masseter, temporalis and pterygoid muscles. The ligaments help to support and strengthen the joint, while the muscles are responsible for the mandibular movements and therefore the actual function of the joint.

LIGAMENTS.

The temporo-mandibular ligament is for all practical purposes a part of the articular capsule. It is attached by its base, to the lateral surface of the posterior part of the zygoma and to the articular tubercle. Its fibers run downwards and backwards to the lateral margin of the neck of the mandible. This is usually the part of the capsule encountered in surgery and the part that is incised to allow entry into the joint itself.

The speno-mandibular ligament is a long membranous band which is really not closely related to the joint per se. "It extends from the spine of the sphenoid to the lingula of the mandible and medial margin of the mandibular foramen. Above, it lies medial to the lateral pterygoid muscle and the auriculo-temporal nerve; inferiorly, the internal maxillary vessels intervene between it and neck of the mandible; whilst, still lower, the inferior alveolar vessels and nerve lie between it and the ramus of the mandible⁽²²⁾."

The stylo-mandibular ligament is part of the capsule of the parotid gland. It is attached above to the styloid process, and below, to the angle of the mandible, between the medial pterygoid and masseter muscles.

The latter two ligaments add little to the strength of the joint; it is primarily the masticatory muscles on which the security of the joint depends. It is they, which keep the condylar head in its position under normal conditions, but which will also tend to displace it, in cases of subcondylar fractures. A description of the ligaments, however, is justified because it does help to establish all anatomical relationships that exist in the area.

MANDIBULAR MOVEMENTS AND MUSCULAR ACTION.

The anatomical arrangement of the joint structures allows for three main types of motions, namely:—

- (1) The hinge motion
- (2) The gliding motion
- (3) The rotary motion.

Specific motions are carried out with the different movements of the mandible, which are in turn affected by the muscles of mastication. The mandible can be—

- (1) depressed, as when the mouth opens.
- (2) elevated, as when mouth closure is executed.
- (3) moved forwards or backwards, as in protraction and retraction.
- (4) Moved from side to side, or lateral excursion as occurs during chewing and grinding.

(1) *Mouth Opening*—This act which is simply a depression of the mandible is accomplished by the action of the lateral pterygoid muscles assisted by the suprahyoid group. The coronoid process moves forwards and downwards, and the angle of the mandible backwards and downwards. It naturally follows that there is elongation of the temporalis and stretching of the masseter and medial pterygoid muscles at the same time. As the mouth opens, the condyle together with the meniscus glide forward on the fossa and tubercle. The forward gliding of the meniscus and condyle in the upper compartment of the joint is accompanied by another movement in the lower compart-

ment which consists of a rotation of the condyle on the lower surface of the articular disc.

(2) *Mouth Closure*—This is accomplished by the temporalis, masseter and medial pterygoid muscles. During this action, the condyle slips back into the glenoid fossa. Abnormal posterior movement is prevented by contact of the lower teeth with the upper.

The position of the transverse axis around which the movements of elevation and depression take place, is generally supposed to be at the level of the mandibular foramina. Those are, therefore, points of least movements, and so the inferior alveolar vessels and nerves are not unduly stretched as the mouth is opened or closed.

(3) *Protraction and Retraction*—As the mandible is thrust forward or drawn backward into a protrusive or retracted position, the masseter, the pterygoids and temporalis muscles function. During protraction there is some depression, and similarly with retraction, some elevation. During these movements the condyle and meniscus glide forwards and backwards upon the temporal articular surface. These movements are confined mostly to the upper compartment of the joint.

(4) *Lateral Movement*—In lateral excursions one condyle, with the disc will glide anteriorly and downward and medially to the height of the articular eminence, while the other rotates in the opposite direction. This is accomplished by the pterygoids of either side.

It can be reasonably concluded, therefore, that good function depends on good muscle tone, and that anything that affects tone and length will affect the joint, its component parts and its function.

(21, 22, 23, 24).

IV. CLASSIFICATION OF TEMPORO-MANDIBULAR JOINT DISORDERS.

Some types of disorders are characterized by certain pathological and clinical features making differentiation relatively easy, while in others the clinical pattern

varies considerably and their identification is more complicated.

Bellinger ⁽¹⁷⁾ classified joint disorders under four headings, on the basis of arthritic involvement:—

- A. Traumatic Arthritis
- B. Infectious Arthritis
- C. Rheumatoid Arthritis
- D. Degenerative Joint Disease

IV. A. TRAUMATIC ARTHRITIS

The Etiology is usually a severe single traumatic injury such as a severe blow, fracture into the joint and dislocation. For purposes of simplicity, it is well to also consider strains and sprains as causative factors in traumatic arthritis.

When the movements in a joint are carried beyond their normal physiological limits for any untoward reason, and the soft structures which bind the component bones together are overstretched or torn, such an injury is said to be a sprain or strain. A strain is in reality a sprain in its simplest form and only involves soft tissue injury. A strain may be—

- (1) Acute, as a result of a sudden single wrench,
- or
- (2) Subacute, arising from repeated smaller injuries.

The degree of pathogenesis depends on the type, severity and duration of the injury. The primary reaction is a synovitis, which may be complicated by hemiarthrosis, especially when the joint capsule is torn.

Signs and symptoms.

- (1) History of injury with acute symptoms of sudden onset.
- (2) May occur at any age, but most frequent in young people.
- (3) Traumatic arthritis is usually mono-articular.
- (4) There is usually localized tenderness, pain on movement, swelling and limited action.

X-Ray signs—If there is synovial effusion and hemorrhage into the joint space radiograms will appear cloudy in the joint areas, otherwise, except in cases of

fracture, x-ray findings are not highly significant.

Treatment—The condition will usually subside without complication by:—

- (1) Establishment of comparative rest of the joint by practising restriction of motion and subsistence on a soft diet.
- (2) The use of analgesics.
- (3) Cold therapy immediately following the injury followed by
- (4) The application of dry heat supplied by an electric pad, infra-red lamp, or better still, by short wave diathermy in the later stages.
- (5) Intra-articular injection of hydrocortisone in cases of severe pain (to be discussed later on)
- (6) Correction of any occlusal abnormality.
- (7) Injection of the joint with some sclerosing agent, if the injury was severe enough to result in a great deal of mobility.

Prognosis: Provided proper care and treatment are instituted the prognosis in cases of traumatic arthritis is usually very favourable.

Differential Diagnosis: A specific history of trauma, the sudden onset of acute symptoms and its mono-articular nature serve to establish a diagnosis and to differentiate it from the other types of joint disorders.

1V B. INFECTIOUS ARTHRITIS:

As the name implies, the Etiology is based on the premise that some specific bacteria are responsible. These bacteria reach the joints by way of the blood stream, or by metastasis of pyogenic infection from neighbouring areas. The organisms most commonly associated with infectious arthritis are the staphylococci and streptococci, more rarely the pneumococci and the gonococci.

Clinical Findings:

An inflammatory reaction is usually present, characterized by extreme pain, loss of motion and pyrexia. The pain is very severe and even passive motion of

the joint is quite trying. There is tenderness when pressure is applied over the joint area in front of the tragus of the ear. In infants the condition may not be noticed until ankylosis has taken place. In severe cases there is active suppuration, and this may cause rapid destruction of the meniscus and articular surfaces of the mandibular joint. This may produce a fibrous or bony ankylosis of the joint.

Gonorrheal infection sometimes causes an acute infectious arthritis. The condition is frequently associated with exudation through the destroyed tympanic plate into the external auditory meatus. It may occur in the newborn and goes unnoticed until the child is called upon to masticate.

Syphilitic arthritis is not very typical. Usually other joints are also involved, and there are other symptoms present, in addition to the evidence gained by serologic examination.

Arthritis of the mandibular joint due to the tubercle is practically unknown. Thoma holds that tuberculous arthritis may affect the joint in cases of tuberculous osteomyelitis of the ramus by direct extension.

Diagnosis: That a specific infectious arthritis exists is usually suggested by the history associated with the condition. Culture for the usual pyogens, for gonococci and the tubercle bacilli should be made to definitely establish a diagnosis. This is accomplished by aspiration of joint fluid.

Signs and symptoms:

(1) The onset is usually acute but may be insidious.

(2) The disease usually is polyarticular at first, developing into a monoarthritis.

(3) The patient usually complains of chills, accompanied with a rise in temperature.

(4) Swelling, trismus and extreme pain on motion usually exist.

(5) The condition may occur at any age, but it is most prevalent between 20 and 40 years.

X-Ray signs:

(1) These are usually absent in the early stages.

(2) A narrowing of the joint space exhibiting destruction of the articular surfaces.

(3) Involvement of subchondral bone and later

(4) Bony ankylosis.

Treatment:

This is both systemic and local. The presence and sensitivity of the organism is demonstrated and then chemotherapy with antibiotics instituted. Analgesics may be used to relieve pain. Absolute rest in acute states, followed with passive motion when painless movement is possible, are recommended. Establishment of drainage might be considered in the face of a suppurative infection.

Prognosis:

If treatment is instituted early, the prognosis is good.

Differential Diagnosis:

With this type of joint derangement we get a history of polyarticular symptoms at first, developing into a monoarticular arthritis. Aspiration of joint fluid with proper cultural studies will establish a true diagnosis. The condition usually responds well to early treatment.

IV C. RHEUMATOID ARTHRITIS:

The Etiology of this form of arthritis is still very speculative. Some believe the condition to be caused by a low grade infection and that focal infection plays an important part in its etiology, while others believe that the disease is an allergic condition. Recently, emphasis is being placed on adreno-cortical dysfunction. The condition may affect the temporo-mandibular joint, but as a rule the disease is polyarticular, and seems to occur most frequently among women between 30 and 50 years of age.

Symptoms:

Stiff and painful joints on movement, especially in the early morning. There is painful periarticular swelling of the affected joints with localized muscular atrophies. There are periods of exacerba-

tions and quiescence. The joint is stiff in the morning as a rule, but improves with active function as the day progresses.

Pathology:

There is usually a periarticular and intra-articular involvement. The synovial fluid is cloudy. There is a leukocytosis, with neutrophils usually predominating. The synovitis produces a serous exudate in the joint spaces from whence the process gradually extends into the cartilages. This results in destruction of the articular surfaces of the joint, evidenced by narrowing of the joint space radiographically.

Treatment:

Diverse forms of treatment are employed, including analgesics, heat, motion and splinting at various stages, and occasionally gold therapy. Every new "cure" is accompanied with initial results that are inevitably favourable.

The discovery of ACTH and Cortisone offers renewed hope, and encouraging reports are appearing in the literature. The prognosis should be guarded, but not as gloomy as has been so often depicted.

IV. D. DEGENERATIVE JOINT DISEASE

There are many different terms used by authors to refer to this form of derangement. Osteoarthritis, arthritis of senescence, arthritis deformans, degenerative arthritis apparently are all synonymous. The consensus of opinion is, that it is a process which is "associated with physiological aging of the tissues of joints, aggravated by strain, microtraumas, and deformities." ⁽¹⁹⁾

In the temporo-mandibular joint these disturbances can be the result of:

- (1) Bruxism, with consequent severe wear of the teeth and overclosure, thus initiating increased functional stresses in the joint—this can be classified as a muscular disturbance.
- (2) All inherent and acquired occlusal discrepancies.

Pathology:

Bellinger ⁽¹⁷⁾, Bauer ⁽¹⁹⁾, Comroe ⁽²⁰⁾, Steinhardt ⁽²⁵⁾ et al, paint the same picture in

varying ways. One concludes that there is a resorption of the articular cartilage with resultant exposure of the underlying bone. Proliferative activities of connective tissue and bone at the circumference of the damaged areas lead to marginal hypertrophies, often referred to as spurs, lipping or osteophytes. These occur mainly on the condyle head, but may well occur on the articular surface of the fossa. The meniscus is affected by these changes and exhibits similar degenerative alterations. Perforations of the meniscus have also been reported.

Signs and Symptoms:

The onset is insidious, occurring usually in those over 40 years of age. Pain is the cardinal symptom and since it occurs on use but is relieved by rest, this differentiates the condition from that of rheumatoid arthritis. Stiffness follows prolonged periods of rest, but this is of a shorter duration as compared to that occurring with rheumatoid arthritis.

Roentgenographic findings

(1) Hazing and clouding of joint affected.

(2) Slight narrowing of the joint space with alteration of the position of the condyle, which may be displaced posteriorly and superiorly in the closed position indicating absorption of the articular cartilage.

(3) In the open mouth position, x-rays may give evidence of restriction of the condyle in its anterior excursion, and it will be posterior to the eminentia; or the condyle head may have a wider than normal excursion and move far anterior to the eminentia.

(4) Hypertrophic changes may be present around the articular margins.

(5) There may be evidence of osteophytes and a deformed condyle head.

Treatment:

In the very advanced cases, the condition is irreversible and permanent, but since the symptoms can be relieved and progress prevented or at least retarded, it is important to reassure the patient

that it is not a crippling condition. Treatment should be of a conservative nature and surgery is only indicated when the patient cannot live with the affliction. Rest is advisable, but not to the extent that the jaws should be immobilized completely (intermaxillary wiring). Mild exercise prevents the formation of fibrous adhesions.

Correction of any occlusal discrepancy is a necessary part in the treatment of degenerative joint diseases. If pain and trismus are sufficiently severe so that occlusal equilibration is impossible, then supportive therapy in the form of analgesic drugs, heat and intra-articular cortisone injection are helpful. Procaine and other irritating substances have proven worthless. Sclerosing agents, however, are sometimes indicated in cases of hypermobility, to limit condylar excursion.

V. EVALUATION OF RADIOGRAPHIC STUDY IN TEMPORO-MANDIBULAR JOINT DERANGEMENT.

Some of the early writers did not believe that radiographic studies were of any importance in the management of temporo-mandibular joint disorders. This could very well be because the early attempts at x-rays of the temporo-mandibular joints revealed very little details of diagnostic value.

A more thorough understanding of the anatomy and physiology of the joints, together with highly specialized roentgen techniques, now provide very enlightening radiographic information of the temporo-mandibular joints.

Stereoscopic films, cephalometry, laminography, arthrography and planigrams may be employed, and they give us information regarding the size and shape of the condyle, the movement of the mandibular condyle from rest position to full closure or to the wide open position, and the relations of the condyle to the eminentia articularis, to the glenoid fossa and to the external auditory meatus. Information is also obtained as to the width of the joint space, hazing and cloud-

ing of the affected joints and evidence of hypertrophic changes.

It cannot be sufficiently stressed that several views in the open, closed and at rest positions are useful. Films in the lateral oblique position are probably of most value. These will show the anterior-posterior relationship of the condyle to the glenoid fossa and to the eminentia articularia. They will also give evidence of the width of the joint space.

One technique Doub⁽³⁰⁾ for taking such films is as follows:

"the Hodges skull apparatus with the Bucky diaphragm in the vertical position and the patient seated comfortably before this. The exact location of the mandibular fossa is located by placing the finger over the area indicated by the patient opening and closing the mouth. The area is then placed directly over the centre point of the grid. The face is allowed to come to rest supported by the malar eminence and the anterior mandible. This produces an anterior tilt of 15 degrees. The self-centering tube is now shifted 23 degrees cephalad, and stereoscopic films are made in this position. With the patient in the same position, a cloth-covered cork, of varying sizes up to 1½ inches is placed between the teeth, and stereoscopic films are made in the open-mouth position. Both right and left sides are similarly examined. The examination requires four 8 x 10 films."

A posterior-anterior projection will also demonstrate the joint structures in their lateral relationship, and in certain cases the submental vertex position, an exaggeration of the Watters position, has been of value.

By injecting a radiopaque medium into the upper and lower joint spaces, the outline of the joint space is demonstrated and so damage of the capsule, perforation of the disc and other soft tissue changes can be visualized. This form of arthrography has been employed extensively by Norgaard of Copenhagen and is very well reported in his writings.⁽³⁸⁾

(to be concluded in February)

Periapical fibro-osteoma or cementoma

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INTRODUCTION

A comprehensive review of the literature credits Brophy (1) in 1917, as being the first American author to mention the cementomas as an entity. Despite the numerous reports on cementomas which have since followed, some controversy concerning its etiology and nature still exists.

The purpose of this paper is an attempt to shed more light on the cementoma as a result of studying closely 228 patients with this lesion. It is hoped too that diagnosis will thus be facilitated, treatment will not be damaging and more will be known concerning its possible relationship to human disease.

SYNONYMS AND NOMENCLATURE

The young investigator becomes easily confused and often misled when such terms as cementoblastomas, fibrous dysplasia, localized osteitis fibrosa, syphilitic granulomas, periapical fibromas, radicular cementomas, ossifying periapical fibromas, periapical fibrosis with formation of cementomas, osteoid osteomas, osteofibromas and localized osteo-dystrophies are used when describing true so-called cementomas or better named, "periapical fibro-osteomas." In most instances the various terms appear to arise from different theories as to their etiology and varying histologic observations during their several phases of growth.

Thome (2) is of the opinion that the term cementoblastoma is more descriptive since, he feels, the lesion arises as a result of an hyperplasia of cementoblasts from the periodontal membrane the result of which causes an osteolysis followed by cementum formation. McCall & Wald (3) believe that this lesion has some of the characteristics of localized osteitis fibrosa and since it occurs at the apex of

the tooth it might be called a periapical ostea-fibrosis. Stafne (4) in 1933 called the lesion cementoma, and in 1934 (5): periapical osteofibrosis with formation of cementoma. Nine years later (6) referring to the initial development of this lesion, he called it: Periapical fibroma. Thompson (7), Miller (8), Dewey (9), Bernier (10), Thoma, Cascario and Braccivicz (11), Zegarelli & Ziskin (12), Demaree (13), and Grant & Hendrick (14), have used the term cementome referring to this lesion. Ennis (15) stated: "following years of observation of this condition, combined with microscopic studies, we believe the name ossifying periapical fibrosa, is the term which best describes the condition." "Fibro-osteome" is the term preferred by Ewing (16) and Glickman (17) speaks about "Fibrous dysplasia in alveolar bone." Pancoast & al (18), because they believed that this condition might be caused by syphilis, called the lesion a syphilitic granuloma. Zagarelli (19) prefers the term periapical fibro-osteoma.

As a result of our own observations, we, too, prefer the term "periapical fibro-osteoma" because it describes histologically more accurately the very nature of the lesion—"periapical" since the mass is found almost always at the apices of the teeth—"fibro" because in its earliest stage the osteolytic area contains a true fibrome structure and, lastly—"osteoma" since calcification invariably follows and continues over a period of years to complete calcification and hypercalcification of the mass.

DEFINITION

A periapical fibro-osteoma, then, may be defined as a benign neoplasm of limited growth, originating as a result of a fibroblastic proliferation of the connective tissue cells of the periodontal membrane surrounding the apex of a tooth followed by osteoblastic activity which in turn causes calcification of the tumor.

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LITERATURE

For purposes of convenience we have divided the literature into:

- (a) Incidence and Location
- (b) Etiology
- (c) Histopathology

Incidence and Location: Colyer (20) in 1910 and Dewey (21) in 1926 were of the opinion that these tumors were more common in horses than in humans. Widdowson and Widdowson (22) similarly observed that cementomes are rare in humans but common in horses and ruminants. Staine (23) states that cementomes are one of the most common neoplasms of the jaws. Ennis (15) has noticed that these tumors are much more common now than they were 15 to 20 years ago. Zegarelli & Ziskin (12) called attention to the important sex incidence which they felt might be significant from an etiologic point of view. Bradley (24) too, observed the fact that most reported cases were seen in females.

There is almost unanimity of opinion that periapical fibro-osteoma have a strong predilection to occur in the anterior region of the mandible. Thompson (7) found a ratio of 17 to 1, mandible to maxilla. Others (25) (26) give figures of 5:1 and 23:1.

Etiology: Many theories have been advanced to explain the etiology of the periapical fibro-osteoma. Among them are included various systemic diseases, syphilis per se, trauma — acute or chronic, chronic irritations of other types, low grade infections, endocrine imbalances, and congenital anomalous factors.

Thome (27) generalizes that the etiology quite likely is constitutional since the periapical fibro-osteoma are so frequently multiple in number. Dewey (21) feels that both a predisposing constitutional factor and a local exciting factor are necessary for the formation of such neoplasms.

Rickets as a possible factor is advanced by Bland-Sutton (28). Pancoast et al

(18) state that syphilis plays an etiologic role in many of these lesions.

A number of investigators including Stafne (4), Bodner and Bodner (29), Demaree (13), Thompson (7), Miller (8), and Lefkowitz (30) feel that trauma of various types such as injuries or blows, traumatic occlusion, abnormal biting habits, thread biting, pressure of appliances, etc., may be the true causative factors.

Cahn (31), Ennis (15) and Widdowson and Widdowson (22) are of the opinion that periapical fibro-osteomes are the result of a chronic irritation of one sort or another.

Zegarelli and Ziskin (12) on the basis of 50 consecutive cases of periapical fibro-osteoma in females state that "since all these growths were found in females in our group, the female hormones assume an important role in etiology."

Dewey (21) states that these abnormal thickenings of cementum are congenital.

Scannell (25) came to the conclusion that the etiology of the "cementoma" is undetermined.

Histopathology. In reviewing the literature on the histopathology of the periapical fibro-osteoma, one finds confusion of terms in nomenclature to such an extent that it appears important to define and differentiate cementicles and cementomas.

According to Kronfeld (32) cementicles are calcified bodies found in the periodontal membranes of teeth of adults; they usually are small and vary greatly in number. Most authors have described the process as a deposition of cementum concentrically arranged about a focal center. Gottlieb (33) is of the opinion that cementicles form through the deposition of cementum over the degenerating cells of remnants of Hertwig's sheath.

Cahn (31) calls cementicles "calcification of epithelial cells, remnants of Hertwig's sheath . . . in the periodontal membrane." Orban (34) makes the following distinctions; i.e. cementicles may remain free in the connective tissue or fuse into

large calcified masses or be joined with the normal cementum.

Mikola and Bauer (35) noted that cementicles as spherical calcified bodies lie free in the periodontal membrane and that these cementicles have their origin from any one or more of five different sources, namely from: calcified epithelial rests, dystrophically calcified connective tissue, small spicules of cementum or alveolar bone displaced into the periodontal membrane by trauma or by the functional movement of the tooth, calcified Sharkey's bundles, and calcified thrombosed vessels within the periodontal membrane. It was their opinion that the fusion of free cementicles around the apical end of a tooth is not considered as a true "cementoma."

Bernier and Thompson (26) reported fifteen cases of cementomas, five of which showed definite histologic evidence of cementicle formation.

One of the earliest histologists to report on the cementomas was Gottlieb (33) in 1921 who suggested that the nidus for its formation in the growing tumor were degenerated epithelial cells from the rests of Mallassez. Bauer (36) was of the opinion that cementoma arose from detached fragments of cementum or from thrombosed blood vessels.

Grant and Hendrick (14) and Thompson (7) are of the opinion that the masses of cementum in cementomas are formed by a cellular stroma acting as the nidus of the neoplasm and that there is a consequent formation of cementicles and bone.

Dewey (9) noted their distinct histologic structure, origin and genesis and stated that the cementicles differ histologically from the cementomas. Mikola and Bauer (35) expressed essentially the same opinion.

Stafne (4) and Bradley (24), both came to the conclusion that the cementomas were the results of the proliferation of the connective tissue of the periodontal membrane.

In a later paper based on a study of

sixty-five cases, Stafne (5) found that the masses of fibrous tissue contained osteogenetic cells capable of producing both normal bone and cementicles; i.e. that these cells were osteoblasts and cementoblasts. He concluded that periapical fibrosis might develop into a variety of forms: (a) fibrous mass may be converted to cementum; (b) it may remain as a cementoblastoma or fibrome for an indefinite period of time, or (c) it may be replaced by bone.

Thome (37) suggests that since cementoma originates from the dental follicle they arise either from the apical area of these follicles or the mature periodontal membrane which is its end product.

Glickman (17) studied one case microscopically and found numerous spherical bone trabeculae and osteoid, connective tissue collagen and numerous fibrocytes, many osteoblasts, and few osteoclasts.

Cahn (31) examined a case of periapical fibro-osteome histologically in its early stage and was unable to differentiate it from a granuloma or from sclerotic bone.

Bodner and Bodner (29) noted that the histologic picture of these lesions is seen in several stages; i.e. bone destruction and replacement by fibrous tissue, laminated deposition of cementum, and finally calcification.

Bernier and Thompson (26) are of the opinion that the initial growth in the formation of the cementoma is a productive fibrosis from the periodontal membrane and that the periodontal membrane has the potential power of producing both bone and cementum through the actions of undifferentiated fibrous connective tissue cells. They expressed doubt that detached fragments of cementum or thrombosed blood vessels could form the nucleus of cementicles.

MATERIAL AND METHODS

The present study is based on a group of 228 patients with periapical fibro-osteomas collected over a period of fifteen years. The source of our material for the

most part was from the Diagnosis Clinic of the School of Dental and Oral Surgery, Columbia University, New York City. A small number, not exceeding ten, were patients referred to us by local general dental practitioners specifically for diagnosis and information concerning these lesions. Included in this 228 patient-group are 50 cases previously reported by Zegarelli and Ziskin (12) in 1943.

All patients in whom periapical fibro-osteomas were discovered or suspected, were subjected to a thorough dental clinical and roentgenologic examination. This was followed by complete case histories including: name, age, sex, race, occupation, marital status, number of pregnancies and medical histories including past and present systemic diseases.

Those teeth with suspected periapical fibro-osteomas were examined and tested for vitality by use of the S.S. White Pulp Tester No. 2 as well as by objective tests using heat, cold and percussion wherever necessary. Color of teeth, position in the arch, caries and fillings were also noted. Careful histories were taken concerning trauma of any sort including thread biting, traumatic occlusion, blows, accidents, habits, etc.

For purposes of statistical simplification and to avoid any possibilities of including central fibro-osteomas in our group of cases, we screened from consideration those patients with fibro-osteomas in areas which were edentulous.

DIAGNOSIS

In order to properly differentiate the periapical fibro-osteomas from similar appearing lesions, one must have clearly in mind the specific criteria for diagnosis. It appears well accepted by most authorities that a periapical fibro-osteoma should present the following positive and/or negative signs or symptoms clinically, roentgenologically and biochemically.

Clinical Findings. Normal color of teeth, normal vitality responses by electrical means and/or objective tests of heat, cold and percussion; lack of symptomatic

pain; lack of inflammatory reactions in the area, i.e. normal gingives and mucosae.

Roentgenologic Findings: Dental. The specific roentgenologic evidences of periapical fibro-osteomas are dependent on the particular stage at which they are discovered.

1. *Primary Stage* (fig. 1). This is the earliest form of periapical fibro-osteomas observed in the x-ray. One or more radiolucent areas may appear in a single mouth each surrounding the apex of a tooth. In almost all cases there are no disturbances in the symmetry of the jaws. On rare occasions and wherein lesions are



FIG. 1 (Stage 1 & 3)

many some lateral asymmetry may be found. The radiolucencies vary in size and shape from a minimum of two millimeters in diameter to as large as one or more centimeters and from well-defined areas to more irregular peripheries. In some instances individual radiolucencies fuse with their neighbors thus forming larger areas of involvement. Close observation reveals the apparent apical loss of periodontal membrane and lamina dura simulating the periapical pathosis. The

root end is invariably well rounded however and is not affected by the radiolucency.

2. *Secondary Stage* (fig. II). The secondary or intermediate stage presents definite evidence of calcification usually in the central areas of the radiolucencies



FIG. II (Stage 2)

but occasionally beginning near the periphery. These radiopacities however are invariably surrounded by zones of radiolucency. Here, too, the apical periodontal membrane and lamina dura lose their identity. Fusion of neighboring lesions results in one or more larger areas of radiopacities.

3. *Tertiary Stage* (fig. III). The tertiary or final stage of the periapical fibro-osteoma is the so-called osteometa phase in which the original radiolucency has completely or almost completely disappeared and been replaced by calcified tissues, in fact, hyper-calcified in radiographic appearance. In some instances actual identification of the apical periodontal membrane and lamina dura as specific structures are now observable.

Roentgenologic Findings: Systemic. The periapical fibro-osteoma is a lesion speci-



FIG. III (Stage 2 & 3)

fically localized to root ends of teeth. No skeletal involvements are found. (fig. IV) *Laboratory Findings.* From a systemic point of view one of the most important criteria in the diagnosis of periapical fibro-osteoma is a negative blood chemistry, i.e. invariably the serum calcium, phosphorus, and phosphates are within normal limits. In short, there are not, as



FIG. IV

yet, any laboratory tests which might be used for the detection or diagnosis of periapical fibro-osteoma.

Differential Diagnosis. Although the above criteria for diagnosis of the periapical fibro-osteoma have been well established there are many local and systemic diseases which on occasion may stimulate the "cementoma." It becomes necessary, then, to point out the distinguishing features of these and describe in which manner they differ from the periapical fibro-osteoma.

1. *Periapical Pathosis.* The term periapical pathosis is being used in this paper to mean evidence of periapical disease wherein the prerequisite is a non-vital or devitalized tooth i.e. the periapical abscess, periapical granuloma and radicular cyst. The criteria for diagnosis of periapical pathosis are usually caries with pulp involvement, discolored teeth, non-vitality of the pulp, roentgenologic evidence of periapical bone destruction with breakdown of periodontal membrane, lamina dura with or without resorption of the root end. Other criteria not invariably seen however are traumatic breakdown of the crown, inflammatory swelling of the periapical region, cellulitis, fistula formation, pain and tenderness of the teeth. *These are contrasted with the vital pulp of a tooth with periapical fibro-osteoma—normal color, with or without caries of the crown.*

2. *Endostosis, Bone Whorl, Condensing Osteitis, Osteosclerosis.* These are variously used terms, often synonymously, to indicate hypercalcification of an area or areas in the jaw bones. In most instances these hypercalcifications are *central in location and not related to the roots of teeth either in position or in etiology.* On occasion periapical hypercalcification may be observed over the root end of a *non-vital tooth* and are usually referred to as condensing osteitis i.e. the reaction of nature to the chronic infection of a diseased pulp.

3. *Central Fibro-Osteoma, Osteo-Fibroma, Osteoid-Osteoma and Fibrous Dys-*

plasia. These lesions are being grouped together since their clinical and radiographic appearances are so closely similar. In fact, there is reason to feel that they may be closely associated with each other or even considered under the general heading of local fibrous dysplasias.

Using the term fibrous dysplasia, then, to generally indicate the above lesions *it is usually characterized by being central in location thus differing from the periapical fibro-osteoma* and it is usually, although not invariably, characterized by expansion of the bony cortex of the involved area of bone. Another differential diagnostic criterion, although again not invariably present, is the absence of complete calcification or hypercalcification of the lesion at any time—thus again differing from the periapical fibro-osteoma. The fibrous dysplasias, on the other hand, are similar to the periapical fibro-osteoma in that the blood chemistries here too, are invariably negative.

4. *Cementicles and Hypercementosis.* Cementicles as referred to in the literature above, may on occasion simulate the periapical fibro-osteoma. However, they are usually small, spherical calcified bodies located entirely within the periodontal membrane or extending for small distances into the neighboring alveolar bone. Also, the cementicles may be located along any region of the periodontal membrane whereas by far the greatest majority of "cementomas" are located periapically.

Hypercementosis is an hyperplasia of cementum its structure being invariably radiopaque and invariably *within the inner border of the periodontal membrane the periapical fibro-osteoma is outside the limiting area of the periodontal membrane.*

5. *Osteoma.* The simple and pure osteoma might possibly be confused with the tertiary stage of periapical fibro-osteoma—certainly not with the primary or secondary stages which later have various degrees of radiolucency.

The osteoma is usually central in loca-

tion and is usually an expansive tumor causing deformity or at least asymmetry of the face or jaws.

6. *Hyperparathyroidism.* In rare instances the jaw bone involvement of an hyperparathyroid disturbance may simulate the primary stages of a periapical fibro-osteoma. Skeletal radiographic studies, however, in the case of hyperparathyroidism will reveal usually other bone involvements and also, blood chemistry studies will demonstrate elevated serum calcium and alkaline phosphatase with usually decreased serum phosphorous.

7. *Paget's Disease of Bone.* Here, too, there may be occasions wherein Paget's may simulate the multiple periapical fibro-osteoma. Skeletal x-rays, however, will usually reveal other bones similarly involved. The blood chemistry studies in Paget's reveals normal serum calcium and phosphorous but *elevated serum alkaline phosphatase.*

Histogenesis. When studying histologically the primary stage of the periapical fibro-osteoma one observes the direct extension of the fibers of the periodontal membrane into the growth periapically. It becomes apparent, then, that the periapical fibro-osteoma is the result of a proliferation of the connective tissue of the membrane growing downward and laterally thus surrounding the apical end of the tooth root. As cellular activity in the periodontal membrane begins the resultant proliferation causes destruction by resorption of the lamina dura. As the proliferation progresses the neighboring spongiosa bone also resorbs and is replaced by cellular fibrous connective tissue.

Histology. The three stages in the development of the periapical fibro-osteoma present distinct histologic pictures.

The primary stage is characterized by dense collagenous fibers profuse numbers of young fibroblasts, and few blood vessels. The growth at this stage, then, is typically fibromatous. It may be called the fibroma phase of the periapical fibro-osteoma.

The secondary stage is characterized by bone-forming activity resulting in variable sized islands of calcified structures in a connective tissue matrix. Surrounding these bone formations are osteoid layers and osteoblasts—the latter being the result of a metaplasia of fibroblasts to bone-forming cells. Many fibroblasts are still present in the second stage as well as dense layers of collagenous connective tissue.

The tertiary stage is a still later development of a process begun in the second stage, i.e. osteoblastic activity. The final tertiary stage is a mosaic pattern of newly formed bone with fibrous connective tissue marrow spaces. Small remnants and limiting borders of the original fibroma may still be detected, but for all practical purposes the characteristic histologic picture of this stage is that of an osteoma.

STATISTICAL ANALYSIS (see Table 1)

Ages. The ages ranged from 20 to 68 years with an average age at the time of discovery of the lesion of 38.2.

Sex. There was a great preponderance of females over males in our group of patients with periapical fibro-osteomas i.e. 214 females against 14 males or 93.9% females.

Race. Of 224 patients, 171 or 76.4% were negroes, 53 or 23.6% were whites. The remaining four patients were yellow.

Lesions. There were only 75 patients or 32.5% who presented with a single periapical fibro-osteoma. The remaining 154 had two or more lesions and thus considered multiple. The total number of teeth involved with periapical fibro-osteomas in our group was 732.

Location. 465 of the total 732 or 63.5% were found in the lower incisal area. The mandible was involved in 91.2% of the cases giving a ratio to the maxilla of over 10:1.

Stages. The stages were evaluated purely on a roentgenologic basis. 114 were considered to be in a primary stage, 122

TABLE I

	OUR GROUP	STAFNE (4)	STAFNE (5)	BERNIER & THOMPSON (26)	SCANNELL (25)
Number of Cases:	228	35	65	15	19
Ages: Range	20-68	—	20-62	—	20-61
Average	38.2	43	42.5	37.2	39
Sex: Male	14	10	19	7	3
Female	214	25	46	8	16
Race: Black	171	—	—	5	—
White	53	—	—	10	—
Yellow	4	—	—	—	—
Marital Status: Married	193	—	—	—	15
Single	35	—	—	—	4
Pregnancy: Positive	142	—	—	—	—
Negative	41	—	—	—	—
Lesions: Multiple	154	—	—	2	5
Single	74	—	—	—	14
Location: Maxilla (Anteriors)	36	6	7	1	2
Maxilla (Posteriors)	29	—	—	—	3
Mandible (Anteriors)	540	69	109	10	12
Mandible (Posteriors)	127	3	14	12	13
Total number of teeth involved:	732	78	130	23	30
Stages: I	114	—	—	—	7
II	122	—	—	—	—
III	47	—	—	—	12
Ratio of Maxilla: Mandible	1-10.3	1-17	1-17	1-23	1-5
Syphilis: Positive	27	—	—	—	—
Negative	197	—	—	—	—
Unknown	4	—	—	—	—
Trauma: Positive	20	—	—	—	—
Negative	208	—	—	—	—
Caries and/or Fillings: Positive	21	—	—	—	—
Negative	207	—	—	—	—

in the secondary and 47 in the last or tertiary stage. It is to be noted that in 52 patients more than one stage was observed at the time of discovery.

Systemic Diseases. Positive histories of syphilis were obtained in 27 or about 12% of our patients. 197 patients were negative and in four the histories were questionable.

Fifty-four of the 223 patients with periapical fibro-osteoma were apparently negative for any detectable systemic disease. The remaining 174 patients with positive systemic disease background presented with past or present histories of illnesses ranging from childhood diseases to cardio-vascular disturbances and included one or more of the following:

Negative—54	Allergy—7	T.B.—1
Childhood	Uterine Dist.—6	Jaundice—1
Diseases—62	Diabetes—6	Influenza—1
Fibroid of	Menopausal	Leucemia—1
Uterous—30	Sympt.—5	Eczemia—1
Syphilis—27	Anemia—4	Eclampsia—1
Hysterectomy—16	Hemorrhoids—4	Sterility—1
Arthritis—15	Hernia—3	Diphtheria—1
Typhoid—12	C.A.—3	Prostatitis—1
Sinusitis—9	Asthma—3	Gastric Ulcer—1
Pneumonia—8	Cystitis—3	Osteitis Fibrosa—1
Cardio-Vasc.—7	Skin Manifest.—2	Cystica—1
Malaria—7	Hyperthyroid—2	
Ovarian Dist.—7		

Caries, Fillings and Trauma. Of the 228 patients only 21 or about 9% presented with caries or fillings in the teeth involved with periapical fibro-osteoma. Positive history or observance of trauma was revealed in only 20 patients or less than 9% of our cases.

DISCUSSION

Ages. It is interesting to note the age ranges in our group of 228 cases, wherein the youngest individual with periapical fibro-osteoma was 20 and the oldest was 68. This compares favorably with Stafne's (5) 65 cases and Scannell's (25) 19 cases where the ages ranged from 20-62 and 20-61 respectively. The minimal age of 20, then, can be said to assume much importance diagnostically and etiologically. Apparently, it is quite likely to find periapical fibro-osteoma in individuals below the age of 20 and, also, it suggests a systemic factor rather than local.

Our 38.2 years average age at the time of discovery also compares favorably with others, (4), (51), (26), (25), where the averages were 43, 42.5, 37.2 and 39. However, although of some significance, not too great stress is placed on this fact since the periapical fibro-osteoma is a slow-growing lesion and is usually present for many years before and after discovery of most such lesions.

Sex. The extremely high sex incidence of periapical fibro-osteoma in females is of great significance diagnostically and most likely, etiologically. When it is realized that 93.9% of 228 cases or 214 are females and that the ratio of females to males is

over 15 to 1, certain preliminary conclusions might tentatively be suggested. For example, the periapical fibro-osteoma on the basis of the above finding is essentially a female abnormality. Further investigation along these lines is being done and will continue in an effort to evaluate the role of the female sex hormone, particularly, in the etiology of the "cementomas." The fact that 14 males were discovered with periapical fibro-osteomas does not negate the possible etiologic influences of the female sex hormones. Although our males have not been thoroughly studied as yet (endocrinologically) there is reason for feeling that they too were subjects of female hormonal influences.

Race. Another finding of our investigation which appears to have considerable value when studying the nature of the periapical fibro-osteoma is the very high incidence amongst negroes as compared to white females. Of 224 patients 161 or 76.4% were colored—giving a ratio of over 3 to 1 to whites. This ratio, however, is an apparent one and not strictly accurate since a study of our attendance records in the dental clinic (the source of our cases) revealed 63% whites and 37% colored giving a real ratio of periapical fibro-osteoma of approximately 6 to 1, negroes to whites. Four cases of periapical fibro-osteoma were found in individuals of the yellow race. Why the colored race shows such a marked higher incidence when compared to whites becomes a challenging problem for investigation.

Lesion. It is to be noted that most "cementomas" are multiple i.e. 67.5% against 32.5% single lesions and averaging 3.2 teeth per person. The fact that multiple lesions were much more common than single and that the average was 3.2 teeth per person would argue for a systemic etiology rather than local traumatic or local irritative factors.

Location. Another interesting finding is the favorite site for "cementomas." Fully 465 (63.5%) of the total 732 teeth involved were lower incisors. The mandible was involved in 91.2% of cases giving a

mandible-maxilla ratio of over 10 to 1. Here too, we have provocative and challenging findings.

Stages. When studying and attempting to evaluate the number of teeth involved in the various stages one is impressed with the paucity of tertiary periapical fibro-osteoma as compared to the first two stages. A partial explanation might be the long term duration time of the primary and secondary stages. Wherever possible patients were followed with subsequent follow-up x-rays with the resultant observation that many years might elapse before periapical fibro-osteoma would progress from the first to third stages. In one case almost 25 years were required before one could conclude that the third stage had been attained radiographically. It must be admitted, too, that there is great difficulty in evaluating the various stages on the basis of x-rays alone. However, one valid conclusion is the very slow growth and rate of activity of the periapical fibro-osteoma.

Systemic Diseases. From a study of the statistical analyses of the systemic diseases found in our group of 228 patients one is readily impressed with the lack of any correlation between the known systemic disturbances and the "cementomas." There was no common denominator uncovered in large enough numbers to warrant drawing any conclusions. It can be stated that *no known relationship* exists.

Although attempts were made to secure as complete medical histories as possible a considerable number of cases were incomplete from this standpoint. With further investigation along more specific systemic lines perhaps more valid and conclusive information may be obtained. *Caries, Fillings and Trauma.* No correlation whatever was found between the presence of caries and/or fillings of periapical fibro-osteoma. Only 21 of 228 patients showed evidences of decay or fillings. Similarly for trauma, only 20 patients or less than 9% of our group gave or revealed evidences of any form of trauma to

the teeth involved with periapical fibro-osteoma. Certainly, in view of the above findings trauma plays little if any role in the etiology of "cementomas."

Treatment. Since the periapical fibro-osteoma is a symptomless, benign, slow-growing, limited, self-healing lesion no intervention is advised. It has never been reported, in our knowledge, nor have we ever observed a case of periapical fibro-osteoma causing local disturbance resulting in injury or death of the pulp. The most important problem when dealing with this tumor is to recognize it as such realizing its true benign nature. Only a very small number ever attain such proportions as to cause asymmetry of the jaws. These latter instances may be the only occasions warranting surgical interference for functional or esthetic purposes.

SUMMARY

1. The periapical fibro-osteoma or so-called "cementoma" is a definite clinical, roentgenologic and histologic entity distinct and differentiated from similar appearing lesions as periapical pathosis, endostosis, bone whorl, condensing osteitis, osteosclerosis, central fibro-osteoma, osteofibroma, osteoid-osteoma, fibros dysplasia, cementicles and hypercementosis, osteoma, hyperparathyroidism and Paget's disease of bone.
2. The periapical fibro-osteoma are found more frequently in females than males (15 to 1). It is more often found in colored females rather than white by a ratio of 6 to 1.
3. Decay, fillings and trauma play no role in the etiology.
4. No specific systemic diseases including syphilis as yet can be correlated with the periapical fibro-osteoma.
5. The frequent multiple nature of the periapical fibro-osteoma suggests, however, a systemic etiologic factor.
6. No surgical intervention is advised since the "cementomas" are symptomless,

slow-growing, limited and self-healing lesions.

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Some of the commonly advocated principles concerning the depth, width, shape and form of Class II prepared cavities in deciduous teeth were tested to determine which principles or combination of principles would be the most desirable to include in the Class II cavity prepared for a silver amalgam restoration.

The results of these tests indicated that a wide occlusal isthmus, a rounded and sloping pulpal wall and proximal retention grooves were the most effective in increasing the resistance of the silver amalgam restoration to fracture, while a rounded pulpoaxial line angle and a gingival retention groove were less effective. The maximum resistance to fracture was produced when all of these five principles were combined in the same cavity preparation.

Ralph R. Ireland, D.D.S., M.S., *The Journal of the American Dental Association*, September 1954.

Seventy-six teeth in 73 cases of spontaneous intermittent resorption of tooth tissue were studied clinically. Sixty-three of these cases were examined histologically. The point of origin of the lesion was ascertained in 48 cases; 7 lesions were classified as of the internal type. The variation in pattern of this disease process is due to varying degrees of resorption and replacement by cementum or bone tissue and the rapidity of the alternation of these processes. In the internal type of lesion there is a possibility that the viability of the tooth plays an important role, as it may also in the peripheral type. The resorptive process is commonly observed also in teeth formed in teratomas.

Harry M. Goldman, D.M.D., *Journal of the American Dental Association*.

The present status of dental focal infection*

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INTRODUCTION

The theory of focal infection has been a definite consideration in the practice of medicine and dentistry during the past forty years. Much has been written and innumerable claims have been made that dental foci of infection are etiologic factors in a variety of systemic diseases. In the past, the theory of focal infection was enthusiastically, perhaps erroneously, accepted by many members of the medical and dental professions. Countless teeth were extracted with hope of curing some systemic ailment, but, in only a few cases did improvement of the systemic condition follow this dental treatment. Undoubtedly many teeth were extracted needlessly.

The concept of focal infection is considered to be a biologic possibility, but there is considerable controversy concerning the relation and the importance of dental foci of infection to systemic disease. In recent years the relation of dental foci of infection to general health has been reconsidered and the importance of dental foci of infection as causative agents in systemic disease evaluated.

In this essay some basic definitions concerning foci of infection, focal infection and theories of the mechanism of focal infection are stated; the role of dental foci of infection is reviewed in the light of present day clinical and experimental knowledge. Some conclusions regarding the relation of dental focal infection to certain systemic diseases are presented.

DEFINITION OF: A FOCUS OF INFECTION, FOCAL INFECTION

Billings' ⁽¹⁾ definition of a focus of infection has been much quoted and reads, "A focus of infection may be defined as

a circumscribed area of tissue infected with pathogenic organisms." Kronfeld ⁽²⁾ states, "A focus of infection is a circumscribed and confined area that contains pathogenic micro-organisms and that usually causes no clinical manifestations." Appleton ⁽³⁾ states, "Any localized infection is potentially a focus of infection." This last statement implies that every localized infection is not a focus of infection and for a localized infection to be a focus, infection must spread from this site by some means or other. The words "circumscribed", "confined", "localized" suggest that a focus of infection is chronic in nature.

Focal infection is defined by Kronfeld ⁽⁴⁾ as "a secondary infection in a distant tissue or organ caused by an invasion of the blood stream by micro-organisms from a primary focus." Curtis ⁽⁵⁾ states, "A focal infection is a localized or generalized infection caused by the dissemination of organisms or toxic products from a focus of infection. It probably would be better defined as a metastatic infection." A statement by Appleton ⁽⁶⁾ reads, "The development of secondary lesions traceable to this primary focus, constitutes focal infection." The above definitions of focal infection state or imply that the secondary infection is not adjacent to the primary lesion. Two of these state or imply that the secondary lesion can be a result of bacteria or toxic products from a focus and also infer that the mode of dissemination isn't necessarily via the blood stream.

THE MECHANISM OF FOCAL INFECTION

Most authorities on the subject believe that there are various mechanisms involved in the production of focal infection. Curtis ⁽⁷⁾ gives two mechanisms, "(1) an actual metastasis of organisms from a focus, usually by hematogenous or lymphogenous spread; (2) the transportation of toxins or toxic products from a remote focus to other tissues by the

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War Memorial Award Competition*

blood stream." Appleton⁽⁸⁾ adds another means: "Products of bacterial autolysis at the focus, which have diffused into the blood or lymph may sensitize various body tissues in an allergic sense. Once sensitized, an allergic reaction would take place in these tissues upon liberation of dissolution products from the focus. Another theory put forth by Menkin⁽⁹⁾ is that in an area of injury there is an increased capillary permeability and that bacteria in the blood stream may localize in an injured area and accentuate the inflammatory process. Miller⁽¹⁰⁾, Vaughan and Burman⁽¹¹⁾ are of the opinion that infection is transmitted via the blood and lymph, direct extension, direct contiguity of the gastrointestinal and pulmonary tracts with swallowing and aspiration of infected material. It is debatable whether "direct extension" as a mechanism of focal infection should be considered because it fails to meet the requirements outlined in the basic definitions of focal infection. The validity of the "contiguity of the gastrointestinal and pulmonary tracts" as a means of transmission in focal infection may be questionable although it does seem to meet the requirements for focal infection. Rosenow's⁽¹²⁾ theory of "elective localization" has not been considered in this essay on the basis of opinions expressed by other writers on the subject. Holman⁽¹³⁾ comments, "The specificity of the bacteria has not been proved and the theory of elective localization is so open to misinterpretation and so limited in its application that it cannot be considered as a help in the solution of the problem." Grossman⁽¹⁴⁾ says, "It has been asserted that Rosenow's work has not been adequately controlled, and that the technic employed by him so devastates the laboratory animal that lesions are produced in almost every tissue and organ of the body." Kronfeld⁽¹⁵⁾ states, "Rosenow's findings are not accepted by many prominent clinicians and bacteriologists; other research workers have been unable

to reproduce many of his experimental results."

POSSIBLE DENTAL FOCI OF INFECTION

In the literature, periapical lesions have been emphasized as being important suspected foci of infection; these include chronic alveolar abscesses, infected apical granulomas and infected dental cysts. There are other chronic dental lesions which should be suspected which are: lesions of periodontium (gingival, periodontal membrane, alveolar bone) including pericoronitis; infected pulps; residual infection which includes cysts, root tips, granulomatous tissue left behind following extractions.

PERIAPICAL LESIONS AND DENTAL PULPS

Numerous bacteriologic experiments have been performed to determine if teeth that showed radiolucent areas at their apices were infected and, if so, with what organisms. The results of experiments in which extracted teeth or apices of teeth, secured by root amputations, were cultured have been stated as being inconclusive because of the difficulty in eliminating contamination by the oral flora during removal. However, the results of a number of aseptic experiments, in which cultures were obtained via the root canals of non-vital teeth are reviewed by Easlick⁽¹⁶⁾. Not all of these non-vital teeth showed radiolucent areas at their apices. In summing up the results of these experiments they comment, "It would appear from this survey of bacteriologic and roentgenographic studies in which cultures are secured aseptically, through the root canals, that 11 to 53% of non-vital teeth yield negative bacteriologic cultures depending on their roentgenographic classification." Radiographically these non-vital teeth presented circumscribed radiolucent areas, diffuse radiolucent areas and no radiolucent areas. From the above results it is suggested that not all vitally-negative teeth are infected even though they have radiolucent areas at their apices and that non-vital teeth showing no

radiolucent areas at their apices may be infected. In reviewing other studies of cultures from the root canals of painful vital teeth, the same group comments, "From the meagre reports available, it would appear that 50 to 55% of the root canals of teeth yield positive cultures experiencing pain prior to the extirpation of the pulps." It is pointed out that the cause of pain was not stated in the review of the above studies on painful vital teeth. What percentage were carious exposures and in what percentage had caries not reached the pulp or was the pain due to some other factor? In the positive cultures obtained via the root canal what organisms were found? In reviewing the results of studies by Morse and Yates ⁽¹⁶⁾, Hayes ⁽¹⁷⁾, Gruchalla and Hamann ⁽¹⁸⁾ and Ostrander and Crowley ⁽¹⁹⁾, the commonest organisms found were *Streptococcus anhemolyticus*, *Streptococcus viridans* and *Staphylococcus albus*; *Streptococcus hemolyticus* were found rarely. Easlick ⁽²⁰⁾ comments, "The striking finding, in these reports of cultures secured from teeth during root canal treatment, is the infrequency of isolation of hemolytic streptococcus organism which have been under suspicion as a possible etiologic factor in rheumatoid arthritis and particularly in rheumatic fever. On the other hand, the relatively high frequency of isolation is evident for streptococcus anhemolyticus and streptococcus viridans organisms usually well tolerated by the human host."

In regard to toxic forming bacteria isolated from root canals Easlick ⁽²¹⁾ states, "From the reported studies of root canal infections, in which cultures were secured by an aseptic technic of culturing through the crowns of the teeth "in vivo", the only organism which may be designated as a true toxin producer is *Streptococcus hemolyticus*." It is pointed out again that *Streptococcus hemolyticus* was rarely cultured from the root canals in the above mentioned studies.

Considering the organisms found at the apices and in the root canals of

teeth, and the statements of the group that reviewed the results of the experiments, one questions the possibility that infected periapical lesions and infected pulps are capable of causing focal infection even if the organisms involved could disseminate from the infected areas.

Since root canal therapy and root canal therapy with root resection (in cases where there is a radiolucent area at the apex) is still not accepted by some as sound treatment in selected cases, it is considered briefly here. Sommer ⁽²²⁾ states, "The complete return of cementum, normal periodontal membrane and alveolar bone is sufficient proof that services such as this are . . . biologically sound." Grossman ⁽²³⁾ says, "A chronic inflammatory reaction of the periapical tissue, is a common finding in the presence of an infected root canal. Shortly after the root canal has been sterilized, the cellular reaction subsides and fibroblasts and osteoblasts become more prominent. Minute areas of new bone develop, which in time build up to replace lost alveolar bone. Even though some periodontal fibres have become detached, reattachment occurs once the source of infection is removed." Easlick ⁽²⁴⁾ comments, "Re-establishment of a normal bony architecture and periodontal membrane, as interpreted from the roentgenographic examination, is sufficient evidence of a successful result following root resection or periapical curettage."

I believe one is justified in concluding that redevelopment of periodontal membrane and alveolar bone around the apex of a tooth following root canal treatment is an indication that infection has been removed and that root canal treatments, properly executed, are a means of rehabilitating at least some infected teeth to a healthy status.

PERIODONTAL LESIONS.

The current view held by numerous investigators regarding periodontal lesions as possible foci of infection is well summed up by Miller ⁽²⁵⁾:

"Until recently, the only recognized oral foci were periapical areas. However, evidence has been accumulating in the past few years to show that periodontal pockets are much more dangerous factors in producing focal infection disease because:

1. A much greater zone is involved than that in periapical abscess, considering the total surface area of the walls of all the pockets. It can safely be stated that at least 20 times the absorption surface is involved in an average case of periodontal disease than in a well developed chronic periapical abscess.

2. Absorption from the gingival sulcus is more rapid since the blood and lymph supply to the gingival is much greater than to the periapical area in bone, especially when the latter is surrounded by even a slight degree of condensation or encapsulation.

3. Resistance to bacterial growth is lower in the gingival sulcus than anywhere else in the oral cavity because of food accumulation and stagnation."

The bacteria found in periodontal pockets are also found as normal residents of healthy mouths and as Mitchell and Helman⁽²⁶⁾ point out, "The difficulty of evaluating the presence of bacteria in a periodontal pocket is the same as that of evaluating cultures from extracted teeth; in either case contamination by the normal oral flora cannot be disregarded. In regard to bacteria found in periodontal lesions Appleton⁽²⁷⁾ says,

"At the present time, I believe that most of the lesions of the soft tissues of the mouth and of the periodontal structures are not primarily caused by bacteria or other organisms. The bacteria are there, often in greatly increased numbers and they may aggravate and accelerate the lesion." Elsewhere⁽²⁸⁾ he lists spirochetes with or without fusiform bacilli as prominent members of the oral flora in periodontal disease along with streptococcus viridans, Streptococcus hemolyticus, Staphylococcus aureus, Staphylococcus albus and others.

Cecil and Angevine⁽²⁾ found that the gingival are particularly favourable sites for the absorption of bacteria in experiments in which bacteria were injected into various sites in the body and then recovered in the blood stream.

That periodontal lesions may act as foci of infection is borne out by numerous experiments in which transient bacteremias follow dental manipulation such as the massage of gums, rocking teeth in extraction procedures and chewing on paraffin wax or hard candy. These studies are summarized by Easlick⁽³⁰⁾ and by Mitchell and Helman⁽³¹⁾.

The organisms recovered from the blood stream in the majority of these studies were *Streptococcus viridans* which were also found to be prevalent in periapical lesions. These bacteremias were of short duration and lasted from 10 to 30 minutes in most patients. Northrop⁽³²⁾ states that such a bacteremia has little significance in the normal individual because the blood stream quickly destroys the newly introduced organisms. However a transient bacteremia may localize on the heart valves of a patient with valvular heart disease or congenitally deformed heart and produce subacute bacterial endocarditis. Northrop points out that subacute bacterial endocarditis is usually caused by *Streptococcus viridans*.

From the foregoing it is seen that organisms can be disseminated from periodontal lesions into the blood stream and the organisms, usually *Streptococcus viridans*, are capable of causing subacute bacterial endocarditis in patients whose hearts are predisposed to infection.

On the question of the absorption of toxins elaborated by bacteria in periodontal pockets a series of animal experiments by Graham⁽³³⁾ is worthy of note. Using material obtained from the periodontal pockets of patients with advanced periodontal disease, he passed it through Seitz filters to remove all bacteria. The sterilized filtrates were then injected into 25 laboratory animals. 15 animals died following the injection and it was found

that the livers and kidneys were affected. Graham has pointed out that, "the results obtained from this series of animals cannot be regarded as conclusive evidence of the precise effect of the filtrate from parodontal pockets. . . The experiment does however suggest that substances are elaborated in parodontal pockets which are highly toxic and tend to injure the liver and kidney of animals in the process of their elimination." This experiment at least illustrates that bacterial products from periodontal lesions are a consideration in assessing the role of periodontal lesions in focal infection.

RESISTANCE AND BODY DEFENCES AGAINST BACTERIA AND THEIR PRODUCTS

The question of resistance and body defences against infection should be considered when an attempt is made to assess the role of any infection in the human body.

Curtis ⁽³⁴⁾ points out that infection may not be important when a patient's resistance is high and that infection may become dangerous if the patient's resistance is broken. He defines resistance as rest, food, cleanliness and sunlight.

Appleton ⁽³⁵⁾ pointing out that body defences are "comprehensive and complex" outlines these defences briefly:

1. Toxic substances which are the direct or indirect result of bacterial activity, are neutralized by antitoxins, or detoxified by certain cells, (lymphocytes, leukocytes) and those of the liver.
2. The spread of bacteria are limited by the fixation of agglutinins, the process of inflammation and the filtering action of lymph nodes.
3. Cellular and body fluid defences destroy and phagocytose pathogenic organisms; these are: bacteriolysins, bacteriocidins, opsonins, polymorphonuclear leukocytes, large mononuclear leukocytes, histiocytes, capillary endothelium (in certain organs) and the cells of the reticulo-endothelial system.

In addition he says that resistance may

be considered as a manifestation of the partial or complete immunity which may be natural (hereditary for a race, family, or individual) or acquired actively or passively or may be artificially induced.

Easlick ⁽³⁶⁾ sums up the question of body defence against infection by saying, "Obviously there are many mechanisms in the blood, blood serum, other body fluids and the body tissues that are designed to protect the host when potentially pathogenic parasites gain access to his tissues. These defence mechanisms appear to deserve full consideration when the clinician attempts to evaluate the disease potentialities of a radiolucent area about the root end of a tooth."

It has been pointed out that the body has a complicated defence mechanism against bacterial invasion. However, the ability of the body to overcome infection varies with individuals. Therefore, it is suggested that in assessing any infection in a certain individual, any deficiencies in that person's resistance and body defences against infection, should be considered also. An infection which is unimportant in one individual may be of serious consequence in another.

THE ROLE OF DENTAL FOCI OF INFECTION IN SPECIFIC TYPES OF BODY DISEASE.

Many systemic diseases have been attributed to dental foci of infection in the past. In recent years, however, studies tend to disprove some of the earlier assertions. Herewith are presented the conclusions of recent reviewers.

Subacute Bacterial Endocarditis.

"Although some controversy exists, there is overwhelming evidence in support of the thesis that there is a casual relationship between oral sepsis and subacute bacterial endocarditis . . . the following points seem the most pertinent:

1. *Streptococcus viridans* has been shown to be the organism most frequently associated with subacute bacterial endocarditis.
2. *Streptococcus viridans* is the most

common organism in the oral cavity and is present in all mouths regardless of the presence of infection.

3. Simple manipulations of gingival tissue such as massage have led to *Streptococcus viridans* bacteremia. The presence of periodontal disease has been shown to accompany an increase in the incidence of bacteremia.

4. It has been demonstrated that organisms found in the pulps of extracted teeth as well as in the blood stream after extraction are derived from the gingival crevice and that attempts at sterilization of the gingival crevice result in a decrease in bacteremia.

5. Extractions of infected teeth and manipulations of infected gingivae have been linked with *Streptococcus viridans*, bacteremia and with associated subacute bacterial endocarditis."⁽³⁷⁾

An exhaustive and critical examination of the literature presented during the past 20 years on the role of dental focal infection in valvular heart disease warrants the following conclusions:

1. Subacute bacterial endocarditis usually is implanted on a rheumatic heart valve by the viridans group of streptococci.

2. These organisms are common residents of the mouth and infected root canals.

3. Case histories appear adequate to prove that these streptococci do gain transient entrance to the blood stream, particularly during extractions.

4. Pre-extraction treatment with certain chemotherapeutic agents can prevent these transient bacteremias."⁽³⁸⁾

Arthritis and Rheumatic Diseases.

Arthritis due to specific diseases (gonorrhea, tuberculosis, pneumonia, syphilis, yaws, brucellosis, typhoid fever, meningitis)

"It may be concluded, then, on the basis of the comprehensive experience and opinions cited, that oral foci can be

disregarded as etiologic factors in joint disease of specific infection and that the dentist should expect an accurate diagnosis of the joint disease to accompany a physician's referral of a patient for consultation."⁽³⁹⁾

Rheumatic Fever.

"The reviewer . . . is in no position, until further research is available, to state definitely that the development of a hypersensitive tissue response to hemolytic streptococci, infrequently isolated from cultured root canals of pulpless teeth, is the etiologic mechanism which is essential for the onset of rheumatic fever."⁽⁴⁰⁾

"It may be concluded that the evidence upholding the contention that periodontal foci of infection may play a role in the etiology of rheumatic fever is incomplete."⁽⁴¹⁾

Rheumatoid Arthritis.

"Reviewing the literature on rheumatoid arthritis, one is forced to conclude that it is necessary to await further research before the etiology of this disease can be stated, but recent research has made most difficult the acceptance of any theory which ascribes the origin of this disease to dental focal infection."⁽⁴²⁾

" . . . dental care and the removal of obvious foci of infection are advocated as part of the treatment of patients with rheumatoid arthritis, but not, however, with the expectation of alleviating the rheumatoid arthritis."⁽⁴³⁾

Osteoarthritis.

"Since infection plays no part whatsoever in the production of osteoarthritis, removal of foci of infection cannot possibly be of any therapeutic importance to this disease process."⁽⁴⁴⁾

Gastrointestinal Disease.

"At such a low hydrogen-ion concentration, pathogenic bacteria should experience difficulty in maintaining viability. . . A realization of the defensive ability of

the contents of the normal stomach should direct the producers of health education material toward moderate statements about the effects of pus and organisms swallowed with saliva." (45)

"It may be concluded that the evidence pertaining to a relationship between periodontal infection and gastrointestinal disease is questionable and incomplete." (46)

Ocular Diseases.

"1. Some eye diseases have been attributed to focal infection; however, thorough studies determining this relationship have not been accomplished.

2. If a relationship does exist, the most probable mechanism is sensitization.

3. Periodontal foci of infection can be considered as possible sources of organisms for the allergic response." (47)

Skin Diseases.

"Although definite proof is lacking, it may be concluded that dental foci including periodontal foci may play a role in the etiology of some dermatoses. As in the case of eye diseases the most probable mechanism is sensitization." (48)

Renal Disease.

Easlick (49) does not consider dental infections important in the etiology of renal disease and points out that colon bacteria are most frequently implicated in urinary infections.

Mitchell and Helman (50) conclude, "The evidence showing a relationship between periodontal disease and renal disease is incomplete and not suggestive.

Lung Diseases.

"Presumably, the most obvious mechanism for transmission of oral organisms to the lung is aspiration which may or may not be considered as a mechanism of focal infection." (51)

SUMMARY.

Organisms, predominantly *Streptococcus viridans*, have been cultured from in-

fectured teeth and periodontal lesions. These organisms are released into the blood stream and cause a bacteremia following dental manipulations where abscessed teeth and periodontal lesions are present. The bacteremia is usually transient in nature and may last from ten to thirty minutes.

There is definite proof that *Streptococcus viridans* organisms from dental foci of infection may cause subacute bacterial endocarditis in patients with rheumatic heart disease or a congenitally deformed heart. Such patients should be adequately premedicated with antibiotics before any dental operation.

Lung abscesses due to aspiration of infected material from dental foci are possible.

The evidence that dental foci are etiological factors in rheumatic fever, rheumatoid arthritis, dermatoses, ocular diseases, renal diseases and gastrointestinal diseases is at present incomplete and is doubtful.

Dental foci are definitely not related to osteoarthritis or to arthritis due to specific diseases.

CONCLUSIONS.

It is concluded that dental focal infection has little or no relation to many systemic diseases once associated with dental focal infection. However, in view of the fact that bacteremias do follow dental operations and that such a bacteremia is capable of causing subacute bacterial endocarditis in certain patients, oral foci of infection should be removed.

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LADIES' PROGRAMME

Joint Convention C.D.A.-O.D.A., Toronto, May 15-18

The following tentative programme has been prepared for the pleasure and entertainment of the ladies attending the Convention.

Sunday, May 15th

- | | |
|------------------|----------------|
| 2.00 - 5.00 p.m. | — Registration |
| 8.45 p.m. | — Musicale |

Monday, May 16th

- | | |
|-------------------|---|
| 9.00 - 11.45 a.m. | — Registration |
| 1.00 p.m. | — Coffee Party |
| 7.00 p.m. | — Buffet Dinner and Entertainment |
| | — Old-fashioned Fashion Show staged with courtesy of the Alpha Gamma Delta Fraternity |

Tuesday, May 17th

- | | |
|-----------------------|--|
| 9.00 a.m. - 5.00 p.m. | — Registration |
| 11.00 a.m. | — Luncheon and Tour of Casa Loma |
| 6.30 p.m. | — Convention Dinner and Dance (dress informal) |

Mrs. P. G. Anderson
Mrs. H. R. Bateman
 Co-Chairmen

An effective and practical roentgenographic technique*

by JOHN H. BARR, D.D.S., B.Sc. Dent.**,
Boston, Mass.

Certain developments in the field of oral roentgenography suggest modifications in technique which will assure films of considerably superior diagnostic value. Of these developments, active promotion of the so-called "long-cone" technique has served to awaken widespread interest in and understanding of some basic problems of intra-oral technique, although attended by considerable misconception. Intensive studies in the effects of radiation on living tissues have prompted the downward revision of previous concepts of maximum permissible radiation dosage. Film emulsions of much greater speed, yet lacking objectionable graininess, have become widely available. It is the purpose of this paper to examine these developments with a view to suggesting how they may best find application in enhancing the diagnostic value of roentgenograms in everyday practice.

RADIATION DOSAGE

From numerous papers published through recent years, it is apparent that the last word has not yet been spoken on the subject of radiation hazards. The trend has been clearly toward a progressive reduction in maximum safe permissible dosages, both for the patient and for the operator. Current recommendations limit the maximum safe patient dosage to 100 roentgens, a figure which becomes significant when it is estimated that the customary intra-oral survey of 18 films (taken at 8 inches, using 60 k.v.p. at 10 m.a.) involves a total dose of approximately 75 roentgens. It does not appear safe to assume, as some have done, that any given part of the mouth will

escape receiving radiation during many, if any, of the series of intra-oral exposures. The figures mentioned, a permissible dose of 100 r. and a probable dose of up to 75 r., therefore indicate little latitude for additional films or retakes using conventional techniques. Further, no clear ruling based on adequate data has emerged upon which to predicate the interval of time which should elapse before the permissible patient dosage can be safely repeated, although a period of four weeks is widely mentioned.

FILM EMULSION SPEED

Radiation hazard to the patient can be virtually eliminated without either complication of technique or sacrifice in the diagnostic adequacy of films. Emulsions now employed for high-speed dental films — four times as fast as the medium-speed "radiatized" films — show no adverse contrast characteristics and no detectable increase in graininess even when projected many times their original size. The problem attending the use of these fast films is that of attaining accurately timed exposures. One-fourth of customary exposure times would involve a range of from 0.50 to 1.25 seconds, but timing devices on dental units are not finely calibrated and are rarely reliable for exposures less than 1 second. This disability may be circumvented, providing an identical result, by reducing exposure time by only one-half (involving a range of from 1.0 to 2.5 seconds) and simultaneously reducing milliamperage to one-half, that is to 5 milliamperes. X-ray machines lacking a milliamperage control can be very simply converted to lower milliamperage by an x-ray serviceman.

ORIENTATION OF STRUCTURES

The availability of fast emulsions on dental films has served to bring the exposures involved in "long-cone" techniques

*Presented before the Canadian Dental Association, St. Andrews N.E., September 7, 1954.

**Professor of Oral Diagnosis, Tufts College Dental School.

within a more suitable range than the extremely lengthy exposures which were formerly required. This has been an important factor in encouraging the promotion of such techniques for the dental office, but it is unfortunate that a more correctly descriptive term, such as "parallel film" technique, was not selected. This would have avoided much of the misconception which has arisen. The use of a long cone has actually been little more than a necessary technical device for maintaining reasonable image detail sharpness in the case of films positioned parallel to, and therefore more distant from, the long axes of the teeth.

Placement of films parallel to the long axes of the teeth being roentgenographed has unquestioned advantages in locations where it is genuinely practicable. The potential superiority in anatomic accuracy is especially associated with a more correct orientation of structures in their relation to one another, notably valuable in depicting bone level in a true relation to the base of the clinical crown and to the total length of the tooth.

This introduces nothing new in lower bicuspid and molar technique; it does not succeed to the extent claimed so far as the upper bicuspid and molar regions are concerned. At the present time research is being carried on by R. G. Stephens and this essayist into the relation of the malar process, molar roots, and palate vault. Preliminary unpublished findings indicate the inability of parallel film technique to depict the entire length of upper first and second molar teeth in at least 50 per cent of cases, unless an unexpectedly high correlation between root length and palate height can be proved. The literature strangely enough offers no information of this nature. And even less frequently — no more often than one case in three — does it seem that these teeth can be shown unobscured by the shadow of the malar process; while in only 20 per cent of cases will it seem possible to show at least a couple of millimeters of periapical bone above the first molar root before the

malar shadow is encountered. It is doubtful that any technique, parallel film or otherwise, can be devised to produce routinely the desired view in this region, a fact which may offer some comfort to those who have met with frustration in their efforts to roentgenograph the upper molar teeth.

There is little problem in devising a parallel film technique for the lower anterior views provided sufficiently narrow films are selected. Upper anterior exposures, however, are characterized by anatomical limitations on film placement, especially in lateral incisor and cuspid areas, largely comparable to those discussed in relation to the upper molar views. Although lacking data in support of the statement, it may be claimed from clinical experience that a considerable percentage of palates are too narrow and/or too low to permit of genuinely parallel film placement. Moreover it may not be generally realized that in roentgenographing maxillary central incisors in an average adult mouth, a #1 film placed parallel to the teeth will require to be located far back between the first molar teeth if periapical bone is to be visualized.

IMAGE DETAIL SHARPNESS

Distant film placement introduces further difficulty. Image detail sharpness is lost as object (tooth)-to-film distance increases. Yet with but passing reference to this effect in the case of parallel and therefore distant film placement, claims of superior image sharpness have unfortunately dominated presentations of "long-cone" technique. The plain fact is that an increase in anode-to-object distance will produce superior image detail sharpness only provided other factors remain constant. A proportionate simultaneous increase in object-to-film distance, such as is involved in parallel film placement, will completely negate the potential advantage of the long-cone device. In other words, the use of long anode-to-object distance in parallel film technique represents no gain in image detail sharp-

ness, serving entirely as a technical device in compensation for the adverse effects of the necessarily remote film position.

FILM PLACEMENT

The question then becomes largely to what extent parallel film placement is justified in view of the anatomical and technical limitations involved. It is unlikely that the operator will be able to predict which patients are anatomically compatible with the concept of the parallel film. Were it routinely possible to achieve the desired result in full, the procedure would of course merit favorable consideration; but most of those who have patiently persevered with parallel film technique admit that compromise in film placement is inevitably necessary if consistently acceptable films are to be assured. A realistically planned compromise can and should retain the parallel film feature to the full extent anatomically compatible with a more routinely successful result. The resulting slight modification in film position will be found to permit, as a secondary feature, a surprising reduction in object-to-film distance.

EXPOSURE TECHNIQUE

It is therefore possible to devise a relatively simple but almost uniformly effective technique which embraces no radical departures from standard procedure. Fast films to minimize radiation dosage; fairly parallel placement for periapical views, supplemented by posterior "bitewing" films, for a reasonably acceptable orientation of anatomical structures; narrow films in curved portions of the arches to minimize object-to-film distance and enhance image detail sharpness. Substitution of five narrow (#0) films for the usual three views of the eight anterior teeth also simplifies film placement and angulation and eliminates film bending. No special equipment accessories or unusual floor space requirements are needed. The operator may elect to install a smaller diaphragm to reduce scatter radiation, but this will not be found to contribute noticeably to film quality.

All exposures are made on ultra-speed film, using 60 k.v.p. and 5 milliamperes at a standard 8-inch anode-to-film distance. All films except lower posterior and "bitewing" views are positioned with a large cotton roll placed between the tooth crown and the incisal or occlusal area of the film. Molar periapical films (standard-size #2) are placed with the long edge horizontal and the cotton roll likewise. Anterior periapical films (#0 size) are positioned with their long edge vertically, and about one-half of a short #3 cotton roll longitudinally opposite the tooth crown, the balance being allowed to project beyond the incisal or occlusal edge of the film. The slightly longer and wider #1 films, which may have to be used if #0 films are unobtainable with high-speed emulsion, have been found rather more awkward to position while offering no better coverage. The composition of the periapical survey is simple to remember — a midline view, flanked on each side by four films each depicting two of the eight teeth in each quadrant, in all amounting to eighteen periapical exposures. Two posterior "bitewing" views are made on each side using standard-size (#2) film. In this way slightly differing horizontal angulations may be employed with differing exposures better related to the transverse dimensions of bicuspid and of molar teeth. An operator already reasonably skilled in the standard procedure will soon find that he can complete this 22-film modification unassisted within an average time of 15 minutes.

There is no obvious solution for one disability of the technique, namely lack of a true parallel-film type of view depicting the upper anterior interdental bone crest. Elsewhere in the mouth, requirements of anatomical orientation are acceptably met and all other desirable attributes of a routine intra-oral survey are satisfied. Coverage of the desired fields is optimal in the face of the anatomical limitations. Image detail sharpness is completely acceptable for magnification in viewing; experimental increases in anode-to-object dis-

tance up to 12 and 16 inches have resulted in no diagnostic superiority. This is presumably due to the extremely small effective focal spot of modern dental x-ray units considered in conjunction with the close film placement. Recommendations toward the variation of kilovoltage to suit individual cases await more general agreement on the optimal k.v.p. for our purposes; when suitable technique modifications of this nature can be presented, more uniformity in contrast characteristics will follow to further enhance the diagnostic contribution of intra-oral films.

EDENTULOUS TECHNIQUE

Brief mention may be made of the technique recommended for edentulous cases. The concept of film placement parallel to the former position of teeth will give the best view of the crests of the edentulous bony ridges, and should be approached as far as practicable. This is again achieved by the use of a large cotton roll to help

position the film. The unorthodox composition of the survey — a #0 film for the midline flanked by a standard #2 film placed vertically in the cuspid region and then a long #3 bitewing film minus tabs for the entire posterior segment — totals but ten films. Coverage is second to none and results in other respects are excellent. At the same time there is a secondary advantage after processing in the unusually ready recognition of the regions represented by each of the different types of film.

CONCLUSION

The techniques outlined represent the fullest practicable utilization of recent developments in oral roentgenography, happily calling for nothing more than very simple modifications of standard technical procedure. The assured result constitutes a rewarding improvement in the diagnostic value of intra-oral roentgenograms.

Twentieth Meeting of the NRC Associate Committee on Dental Research held in Ottawa, October 25, 1954

by J. B. MARSHALL, Secretary

The Associate Committee on Dental Research of the National Research Council held its twentieth meeting in Ottawa on October 25th, under the chairmanship of Dr. J. B. Macdonald of the Faculty of Dentistry of the University of Toronto.

This was the first meeting of the Committee at which the total membership was composed of persons elected to membership subsequent to the formation of the Committee. Dr. Macdonald therefore reviewed the achievements of the Committee under the very able direction of his predecessor and the original chairman,

Dr. R. G. Ellis. In the course of this review it was noted that, at the time of the Committee's inception in 1945, with one or two exceptions, personnel trained for dental research were practically nonexistent in Canada; at the present time, dentists trained for basic research are 12 in number. There are six dentists actively engaged in training programs, and about a dozen other individuals trained in the basic sciences are conducting projects of significance in the field of dentistry. It is hoped that additional stimulus can be given to the prosecution of research in the dental schools.

Although the main problems facing

dentists to-day are caries, malocclusions and periodontal disease, these are by no means the only subjects which might usefully be elucidated. The Committee is of the opinion that the basic science departments of Canadian universities might be interested in research of significance, indirectly if not directly, to problems of dentistry. A publicity program, aimed at acquainting investigators in the basic science departments in the universities with the work of the Committee and the research which it supports, was outlined.

As usual, the Committee devoted considerable time to the discussion of grantees' reports on the 15 projects now being supported. Some of these projects were initiated only during the past year, while others have been receiving support since the establishment of the Committee.

Two of the grantees receiving support from the Committee attended the meeting, by invitation, to report in person on the status of their work.

Dr. R. L. deC. H. Saunders of Dalhousie University presented a most interesting and informative outline of the study being made in his laboratory on the human dental pulp vessels. Since the vascular pattern in dental pulp has thus far been chiefly a matter of conjecture, the results which Dr. Saunders has obtained from the application of an X-ray microarteriographic method to the tracing of human pulp vessels is considered to represent a large contribution to the fundamental understanding of the tooth. Dr. Saunders' review of this work was accompanied by an excellent series of photographic enlargements of microarteriograms showing the disposition of the vessels in both longitudinal and transverse section. Nearly all the teeth in the adult dentition have now been studied in this manner and it is intended that the investigation be extended to the developing tooth.

Dr. E. E. Johns of Kingston also reported to the Committee on his study of the teeth of children in a small village in Greece where conditions were exceedingly primitive and the diet limited almost

entirely to beans, lentils, olive oil and black bread. This study of the development of occlusions on primitive diets was first undertaken by Dr. R. E. Moyers, in whose company Dr. Johns spent three months in Greece.

Cavities and malocclusions of the Greek children were charted and impressions taken of all types of occlusion, according to age groups. It was found that of all the children studied, only 3% showed any evidence of malocclusion. About 50-75% of Canadian children, on the other hand, have some kind of malocclusion. Furthermore, the teeth of children of 4-5 years of age showed a normal adult relationship of the molars, something which is not found in Canadian children until the deciduous molars are replaced.

The possibility of these phenomena being a racial characteristic was considered but an examination of Athenian children living on much the same diet as that of Canadian children, showed a dental development similar to that of children here. These occlusions were therefore felt to be attributable to the abrasive quality of, and/or the vigorous chewing demanded by the black bread which, due to the crude milling methods, contained an exceedingly high percentage of grit.

A control group has now been organized in Burlington where children are being asked to chew an abrasive gum, in an effort to reconstruct the occlusions. By this means; and, by further studies of primitive skulls and experimental animals, it is hoped that conclusive evidence as to the cause of these occlusions can be obtained.

These notes on the projects reviewed at the meeting give some indication of the wide range of research being supported by the Council's Associate Committee on Dental Research.

This twentieth meeting was attended by fourteen members and guests, representing the dental profession and the basic sciences, from Canadian cities from Vancouver to Halifax.

ABSTRACTS



The Effect of a Stannous Fluoride-Containing Dentifrice on Caries Reduction in Children.

by JOSEPH C. MUHLER, ARTHUR W. RADIKE,
WILLIAM H. NEBERGALL, and HARRY G. DAY

Journal of Dental Research, October 1954.

It appears that if the proper dentifrice and fluoride combinations were used it might be possible to produce a significant reduction in dental caries experience in children. Stannous fluoride has been shown to be superior to sodium fluoride in reducing enamel solubility, whole tooth solubility, and caries in rats, hamsters, and human beings. Moreover, good evidence exists that tin fluoride is less toxic than sodium fluoride. The selection of a dentifrice abrasive was made on the basis of enamel solubility reduction tests on numerous abrasive-fluoride combinations. This led to the selection of heat-treated calcium phosphate as the most compatible abrasive. The remaining constituents of the tooth paste, such as binder, humectant, flavour, and detergent, were of the type sold for use in conventional tooth pastes and are commonly available.

514 children of Bloomington, Indiana, were selected at random to participate in the study programme. Each participating child received a thorough prophylaxis by a dental hygienist and a full mouth bite-wing radiographic examination. The child was immediately examined by a dentist with the aid of a mouth-mirror and explorer. The dental caries examination was completed by charting the additional lesions observed on the radiographic films. Following the

oral and x-ray examination the subject was assigned to group 1 or 2 on the basis of estimated caries expectancy.

There is a pronounced reduction in dental caries in 6- to 15-year-old children after using the dentifrice in an unsupervised manner for a period of six months. When compared to the identical control dentifrice not containing stannous fluoride, a 53 per cent reduction in DMF teeth and a 72 per cent reduction in DMF surfaces resulted. There appeared to be complete protection against interproximal lesions, while the reduction in buccal-lingual surfaces was 70 per cent and occlusal surfaces 26 per cent. All of the reductions are highly significant except the reduction in occlusal surfaces. The reduction of caries appears to be related to the subjects' ages, with the greatest protection occurring in the older age groups of the children.

The experimental dentifrice used contained 1,000 micrograms of fluorine and 3,200 micrograms of tin per gram of dentifrice and each tube contained a total of 150mg. of fluorine. If a child brushed his teeth with one gram of the fluoride tooth paste and swallowed the entire amount he would ingest 1 mg. of fluorine. Although it is improbable that any child or adult would swallow all of the dentifrice, such a circumstance would provide only approximately the amount of fluoride as contained in one litre of communal water at a fluorine concentration of 1 ppm. People living in areas where the water is naturally fluoridated above the optimum level frequently ingest several times that amount of fluorine daily for their entire lives with no serious effect.

The Dermatologist Looks at the Oral Cavity.

by GIBSON E. CRAIG M.D.

*Summary of Lecture to the Montreal Section of the
American Academy of Dental Medicine*

This is a summary of a discussion, with slides, on conditions which occur both on the skin and the mucous membrane of the mouth. The purpose is to suggest that dentists could confirm suspected diagnoses by knowing the appearance and distribution of such conditions as they appear on the skin.

Lesions of these surfaces can be divided into two main groups (1) those with an eczematous picture and (2) those which seldom show an eczematous picture.

The eczematous conditions include allergic contact dermatitis and contact dermatitis produced by physical agents such as heat, cold, elements, etc. Pathologically the blood vessels are the shock organ whether the irritant is in the form of a physical agent applied to the surface or histamine released as a result of exposure to an allergen, either externally applied or reaching the skin through the blood stream. The result of such exposures will depend on the strength of the applied substance in the case of physical agents or the degree of sensitivity in the case of allergens. The mildest result would produce merely heat and redness; the stronger result would be loss of serum with collection in the epidermis giving spongiosis — the symptom itching — and possibly vesicle formation. On the skin the vesicles may break on the surface, the serum clot and form crusts which become readily secondarily infected. In the mouth vesicles are not easily seen due to the thin epidermis and the macerating action of the saliva. Also, clot and crust formation cannot occur. Hence, all that is seen is a superficial ulcer. This makes the diagnosis of an eczematous process much more difficult in the mouth than on the skin. Cutaneous contact dermatitis, for example, can often be diagnosed at first sight by the appear-

ance of a vesicular eruption occurring in areas of exposure such as sun burn over the facial prominences, an allergy to hat band leather on the forehead or an allergy to nickel on the ear lobes. In the mouth, unless vesicles are seen, one must rely to some extent on the history of recurrence of symptoms after exposure such as following the use of a dentifrice, or the chewing of foods or tablets.

The non-eczematous conditions are many. A few which occur on the mucous membrane as well as on the skin include: The papulo-squamous group, psoriasis, and lichen planus.

Lichen planus is frequently seen. In the mouth, it occurs most commonly on the buccal mucosa opposite the molar teeth but can also occur on the tongue, gums or palate. The lesions are flat-topped whitish papules which represent dermal infiltration. The papules tend to be distributed in lines giving a cobweb appearance. Suspected Lichen planus of the mucous membranes can be confirmed by looking for cutaneous Lichen planus in the typical distribution, that is, on the anterior of wrists, ankles, and glans penis.

Psoriasis is so rare in the mouth that no typical picture is described. If suspected, in the presence of psoriasis elsewhere such as in the scalp, on the elbows and knees, it is best to confirm it by biopsy.

Herpes simplex is most commonly seen on the lower lip but can occur on the body or in the mouth. The lesion is primarily a group of tense vesicles which break and crust over. In the mouth as mentioned above they form superficial ulceration.

Herpes zoster resembles Herpes simplex in appearance but is unilateral and nearly always preceded by pain except in young children.

Generalized bullous eruptions are few in number and include principally Erythema multiforme, Pemphigus, Dermatitis herpetiformis. The latter does not occur in the oral cavity. Pemphigus is characterized by the formation of large bullae on a normal appearing skin. In

the mouth the bullae break easily and leave ulcers. At times the mouth lesions precede the cutaneous lesions by some time.

Erythema multiforme occurs on the skin and mucous membrane in almost all cases. The lesions are circular erythematous patches, often with central vesicles which gives the lesion a "target" appearance. Erythema multiforme can be produced by drug ingestion, foci of infection but more often no definite cause is found. In such cases the condition usually clears in six to eight weeks.

Syphilis, although not as common in this country as it was a few years ago, should not be forgotten. The primary chancre is a deep ulceration with a raised edge and a dirty base. There are usually large non-tender nodes which can be used for gland puncture. This may be necessary as spirochetes of several types are common in the mouth. The chancre

may be followed by the secondary eruption on the body with the corresponding mucous patches in the mouth. The mucous patches stand out as many coated islands against the red surface of the posterior tongue or soft palate. By the time the mucous patch appears the serology is always positive.

Vitamin deficiencies can often be first noted in the mouth. In deficiencies of vitamin B and iron the tongue tends to be purplish red, painful and smooth. Angular fissures are seen in the Riboflavin deficiency but they appear more commonly in persons with a poor bite where moisture keeps the angular skin moist and prone to infection. Oral lesions may precede the appearance of cutaneous lesions in Pellagra.

Other conditions discussed included Lupus erythematosus, pigmentations, vitamin deficiencies, and heavy metal poisoning.

Periodontics in General Practice

by JOHN WILFRED GALLAGHER, D.M.D., Chapel Hill, N.C.

The Journal of the American Dental Association.

Factors that cause failure in the treatment of periodontal disease can usually be avoided. The most common causes of failure are the following:

Incorrect treatment. Methods of correct treatment can be learned from texts, professional journals and many other sources. Frequently a method of treatment may be the correct one, but failure arises from errors in application of the method. Other common sources of error are an incomplete history, an inaccurate evaluation of systemic factors and an incorrect diagnosis.

Insufficient treatment. Not only must the method be correct, but adequate time must be allowed for the return to normal conditions after treatment. Inadequate results may be produced by the failure to 'follow through' in treatment, to make

proper rechecks and to obtain cooperation from the patient. Unsatisfactory results may be due also to the dentist's inability to detect all the etiological factors or to his failure to employ therapeutic treatment to eradicate them after he has detected them correctly.

Treatment of advanced cases. There are cases which are so advanced that any treatment would result in failure.

Inadequate home care. Adequate home care is a "must" in periodontal treatment. Sometimes psychosomatic therapy may be necessary, since hygiene requires a healthy state of mind as well as ideal oral and body cleanliness.

Lack of proper follow-up examinations. Regular rechecks are essential to the maintenance of prophylactic and preventive care.

Ignorance on the part of the patient. Education of the patient in the value, objectives and status of periodontics in dentistry is the privilege of every dentist, but first of all he himself must be fully versed on these aspects of dentistry.

Cardiovascular Disease as it Affects Dentistry

by CLARENCE DENTON, M.D.

Journal of Dental Medicine, October 1954.

Every dental procedure, just as every medical or surgical procedure, carries some definite risk, however small, to the well-being of the patient. The object of a good dentist will be to keep this risk as small as possible. Certain forms of heart disease, particularly in certain stages, increase this risk, and it is this aspect of cardiovascular disease which is of interest to the dentist.

The problems facing a dentist consist of finding out if the patient has any organic disease, then recognizing the particular aspects which are of concern to him, and then knowing what to do about these aspects. The dentist cannot be expected to decide on the presence or absence of heart disease or to diagnose its nature. He can, however, with a few simple questions, ascertain if the patient knows that he has heart disease, and often what kind. Except in most unusual circumstances, it should then be possible for him to obtain information from a physician as to the patient's cardiac diagnosis and the extent of the disability. This can be done by calling the patient's physician if he has seen him in the previous six months, or by asking him to vis-

it his physician if this is not the case.

All forms of heart disease may result in the occurrence of an arrhythmia or congestive failure. The dentist should know what factors, that he can control, are likely to cause or exacerbate these problems. Coronary artery disease, in addition to these problems, includes the added risk of precipitation of angina or a coronary thrombosis by certain actions or agents employed by the dentist. Rheumatic and congenital heart disease are both associated with the special problem of sub-acute bacterial endocarditis, a condition about which the dentist also has it in his power to do something. In certain cases of either rheumatic or arteriosclerotic heart disease, long-term use is made of the anticoagulants. It is incumbent upon the dentist to know if such a patient is in his hands.

Having determined the existence of cardiac disease and its nature, having recognized the special facts which are of interest to him, the oral physician must know how to employ anesthetic and analgesic and antibiotic agents, so as to minimize anxiety, pain, hypoxia, the duration of the procedure, blood pressure changes, bleeding, infection and arrhythmias. In short, he must know how to perform his dental work so as to prevent or avoid the problems placed before him by the patient with heart disease.

Maintaining Vitality of Injured Permanent Anterior Teeth.

by HAROLD BERK, D.D.S.

Journal of the American Dental Association, October 1954.

The inflammatory processes due to traumatic injuries may make the patient's response to the electric pulp tester unreliable.

If arterial bleeding of the pulp is present or can be initiated, there is sufficient indication that the pulp is vital and therefore should respond to treatment.

When the pulp is exposed as a result of trauma, a pulpotomy should be per-

formed as soon after the injury as possible.

A crown fabricated with self-curing resin provides an immediate, temporary, durable and esthetic protective covering for the materials used in the treatment of these fractures.

Calcium hydroxide-methyl cellulose paste provides stimulation to the pulp to form new dentine and protects the dentine and pulp from further irritation.

The use of calcium hydroxide-methyl cellulose paste simplifies the techniques employed in pulp capping, pulpotomy and the lining of cavities.

Mechanical Properties of Direct Filling Resins

by W. T. SWEENEY, A.B., W. D. SHEEHAN, B.S., and E. L. YOST, B.S., Washington, D.C.

Journal of the American Dental Association, November 1954.

Methods were developed for measuring mechanical properties of small specimens of resin comparable in size to tooth restorations by use of two standard testing machines.

The direct filling resins tested were found to improve in mechanical properties during a period of approximately 24 hours after mixing. This improvement coincided with a decrease in monomer content during the same period.

The compressive moduli of elasticity of

the resins tested ranged from 1.62 to 3.14×10^6 psi, indicating that, as compared with other restorative materials, the resins are low in stiffness.

The yield strength in compression of the direct filling resins varied from 4,600 to 7,400 psi. This low value would permit plastic flow to occur under stresses that might be encountered on occlusal surfaces.

The values obtained on the resins for resistance to indentation were approximately one half of the values obtained on dental amalgam.

In general, the mechanical properties of the direct filling resins are low in comparison with the properties of dental golds, amalgam, and denture base materials.

Relationship of Dental Cavities to General Health

by J. H. MANHOLD and C. E. IZARD

Science — Nov. 26, 1954.

The following are the results of a study undertaken to ascertain whether a relationship exists between dental pathology and other bodily disfunction.

The 8-mo cumulative medical histories of a sample of Naval Aviation Cadets were examined. This group comprised a total of 1080 subjects (26 consecutive classes). The name, serial number complaint, diagnosis, treatment, and disposition of the case were tabulated for each man. It was found that five or more dispensary visits were made by approximately 15 per cent of the total population. Assuming frequency of medical complaints as a health index, these 178 subjects could be assumed to represent the "poorest" on a general health evaluation.

The complete dental records, including roentgenographs, of this criterion group were then collected where possible. DMF (decayed, missing, or filled teeth) ratings

were made from these records. The DMF rating represents a subject's total past and present dental caries experience. It is compiled by scoring 1 point for each surface of a tooth containing caries or a filling and 3 points for each missing tooth. The resultant mean DMF score of the criterion group was then compared with the mean Naval Aviation Cadet DMF rating formerly established.

Of the 178 subjects in the criterion group, complete dental records were found on 121. The other 57 records were unavailable because the cadets had dropped from the programme. Table 1 presents the sample statistics for the criterion group and for a large sample representative of the over-all population of Naval Aviation Cadets.

TABLE 1.

Group	N	$\bar{x}$	s	t	P
Criterion group	121	31.09	14.76	2.597	.01
Unselected group	1019	27.22	15.55		

As may be seen, the mean DMF established on an independent sample of 1019 unselected Naval Aviation Cadets is 27.22 with a standard deviation of 15.55. The mean DMF of the criterion group is 31.09

with a standard deviation of 14.76. The t-test for the difference between these means yielded a value of 2.60, which is significant at the .01 level of confidence. We should note in passing that this difference was established on a population that can be considered above average in general health, having been screened by a rigorous physical examination prior to admission.

In recent years, dentistry, as well as other branches of medical science, has postulated that certain chronic illnesses

affect dental conditions and conversely. The present study therefore, provides an interesting relevancy. It presents empirical evidence of a relationship between general health, as measured by frequency of medical complaints, and oral pathology measured by a decayed missing and filled teeth rating. This finding demonstrates that dental caries, as well as other somatic complaints, should be considered in any appraisal that attaches a general term, such as good, fair or poor, to a person's condition of health.

The Effect of High Speed Burs, Diamond Instruments and Air Abrasive in Cutting Tooth Tissue.

by F. A. PEYTON, D.Sc., and E. E. HENRY, Ph.D.

Journal of the American Dental Association, October 1954.

The temperature rise which develops in the tooth, the vibration experienced by the patient and the operator, the effectiveness and life of the cutting instrument are all modified by the conditions present during the cutting operation. Some of the variables involved in the process include the properties of the cutting instrument, the speed of rotation, the

force applied to the instrument, and the application of coolants to the surface being cut. A study has been made of the effects of high-speed operations with dental burs and diamonds as compared to the characteristics observed when they are operated at slower speeds.

Safe and effective techniques using relatively high speeds of rotation are possible and practical for shaping cavities for restorations. No doubt further variations of technique of operation, combined with additional refinements and improvements in cutting instruments, will continue to be presented to the profession for evaluation, in an effort to establish the optimum condition of operation.

A group of 32 patients were observed with periodontal disease in which anomalies of the tongue seemed to be a contributing factor. Upon closer observation two types of tongue thrusting were found to exist—those associated with a hyposensitive palate and those caused by an acquired habit. In the instance of the hyposensitive palate an inevitable syndrome occurs, that is as a result of the hyposensitivity of the uvula the ordinary sequence of events in swallowing is disturbed, and the tongue is forced to compensate for this inadequacy. The tongue-thrusting therefore results with an unusual force and is therefore accompanied by macroglossia. The dentist must be alert to diagnose the presence of abnormal tongue-thrusting and macroglossia and direct his attention to its correction to the best of his ability, as part of his treatment plan.

Harold G. Ray, D.D.S., M.S., *The Journal of Periodontology.*

Herpes simplex is an acute infectious disease which may be encountered in patients who have undergone oral surgery. High fever, headaches, chills, malaise, and anorexia may result and may last for an approximate period of one week. No specific treatment is available, with exceptions of local applications to relieve pain and swelling and antibiotic therapy to prevent secondary infection.

Marvin E. Pizer, D.D.S., *Oral Surgery, Oral Medicine & Oral Pathology.*

RESEARCH

FOREFRONT OF CANADIAN DENTISTRY

*Role of the Salivary Glands in Extrathyroidal Iodine Metabolism**

by D. M. FAWCETT and S. KIRKWOOD, Dept. of Chemistry, McMaster University, Hamilton, Ont.

Science, October 1, 1954.

Recent evidence indicates that the parotid and submaxillary salivary glands function to control the level of thyroxine in the blood stream by deiodinating the hormone and recycling the iodide ion to the thyroid gland via the saliva and the gastrointestinal tract. This process of degradation appears to be essentially the reverse of the pathway of synthesis in the thyroid gland. The level of thyroxine in the blood is controlled by the rate of synthesis in the thyroid and the rate of degradation in the salivary glands.

If this concept is correct, it follows that the rate of degradation of thyroxine by the salivary glands will be under rigid control, since this is one of the methods for controlling the blood level of the hormone. However, if the process of degradation proceeds through the intermediates moniodotyrosine and diiodotyrosine (DIT), then these substances must be very rapidly degraded to iodide, since they have not been shown to occur other than in thyroid tissue. This leads to the

prediction that there should be a relatively slow, controlled deiodination of the thyroxine present in the blood stream and a very rapid deiodination of intravenously administered DIT.

Albert and his coworkers have studied the rate of deiodination of administered thyroxine and DIT in the human being and the rat. They found that thyroxine was deiodinated comparatively slowly in the body. DIT, on the other hand, was very rapidly degraded to the iodide ion. Tong, Taurog, and Chaioff studied the metabolism of labeled DIT in the rat and observed an extremely rapid deiodination of DIT, 90 per cent being degraded to iodide in 20 min. The rate of deiodination was not influenced by previous thyroidectomy.

We have now been able to show that this rapid deiodination of intravenously administered DIT does not take place in rats from which the parotid, submaxillary, and sublingual salivary glands have been removed. Rats were placed under Nembutal anaesthesia, and the submaxillary, parotid, and sublingual glands were removed. DIT (100 μ g) labeled with I^{131} (100 μ c) was then injected into the jugular vein, in physiological saline solution. A 0.5-ml aliquot of blood was collected from the tail-vein as soon as possible after the injection (usually about 2 min). This sample served to give zero-time values for iodide and DIT. Further 0.5-ml samples of blood were collected at convenient intervals. The heparinized blood

* This article emphasizes a new and important role of the salivary glands—that of regulating the synthesis of thyroid hormones. G.N.

samples were centrifuged, and aliquots of the resultant plasma were submitted directly to paper chromatographic analysis. The relative proportions of iodide ion and DIT on the chromatograms were determined by counting the appropriate spots with an end-window Geiger counter.

Control rats were treated in exactly the same fashion, except that the salivary glands were left intact. The percentage activity as DIT in each plasma sam-

ple was compared with the percentage as DIT in the zero-time sample. In this way the results could be expressed as percentages of the original DIT concentration.

This evidence conclusively demonstrates that the salivary glands have a major role in the extrathyroidal metabolism of organic iodine in the body and that these organs function as "reverse thyroids."

JOINT MEETING
THE CANADIAN DENTAL ASSOCIATION
and
THE ONTARIO DENTAL ASSOCIATION

Royal York Hotel

Toronto

MAY 15, 16, 17, 18, 1955



Convention Theme:

"Dental Progress Through Applied Research"

**CANADIAN DENTAL ASSOCIATION CONVENTION
ART EXHIBIT**

A popular feature of past conventions, The Art Exhibition, will again be presented this year at the 1955 C.D.A. - O.D.A. Convention in Toronto (May 15-18).

Any dentist, his immediate family or associate (dental supply dealer, lab technician, dental nurse, or hygienist) is eligible to exhibit, and all forms of art are welcomed — oils, watercolors, sculpture, photographs, handicrafts, etc.

Works of art will be judged and suitable recognition made in each category.

**Write for information to:— Dr. Maxwell N. Rockman
436 Palmerston Blvd.
Toronto, Ontario**

EDITORIAL

In order of importance

From time to time various proponents of dental treatment programmes are vociferous in their enunciation of a concept which places treatment of disease in a superior position to its prevention. Over the years, when school dental programmes have been under discussion, the point of paramount importance is almost invariably treatment. Vast arrays of statistics have been developed in certain areas to show, with misguided pride, the increases of treatment services to the children in the school population. As one year follows another, specific operations increase, and those responsible for the inauguration and development of such schemes justify their continuance by reference to the tangible evidence of this provision for a treatment need.

On the face of it, it is difficult not to share the enthusiasm for such plans because it is easily recognized that when disease exists it is imperative that it be treated. However, when viewed somewhat more dispassionately, it becomes apparent that not only is no improvement being made as the programmes continue, but regression is actually taking place. If one thinks in terms of an overall treatment scheme the personnel required to conduct it is awesome to contemplate. The cost is staggering to compute.

The Canadian Dental Association, for many years, has rendered intensive study to this problem in public health. The re-

sult of these deliberations has presented three aspects of approach, which, in the order named, are essential to a sound programme of dental public health; namely, research, education, and treatment.

It is fundamentally sound to initiate endeavour at the source of a problem rather than direct attack at a terminal point. The C.D.A. has so expended its efforts that the annual sum spent on dental research in this country has increased from \$5000 to approximately \$200,000. Even a casual observance of the abstracted research monographs which have appeared in the Research section of the *Journal* during the year which has passed will give some concept of the remarkable achievements taking place in Canadian dental research.

By employing means for patient education it is possible to develop a desire for sound dental health. Unless this appreciation is apparent then the cooperation, which is essential for the achievement of permanent results, is not forthcoming. Any attempt to introduce treatment procedures into a non-cooperative environment will result, at best, in only a transitory improvement.

In dental public health programmes it has been the custom to direct treatment to children through school or public clinics. It seems more logical to encourage each general practitioner to provide treatment services for the entire family.

Unquestionably where clinical resources are available there is a tendency to relegate the care of children to such centres. It is difficult, even at best, for these clinics to provide for the entire treatment needs and therefore the approach to dental care in this, the most important sphere of prevention, is of necessity compromised. All practitioners providing positive dental care is infinitely better than a relative few attempting to stem the overwhelming onslaught of treatment needs.

In order to provide this increased service it is vitally essential that certain ancillary workers be trained and utilized. The dental hygienist by proven factual data is able to relieve the dentist of forty-five per cent of his presently expended time, thus permitting him to attend to the needs of more people. By means of such an arrangement it is possible to reduce to cost of many services and at the same time provide greater facilities for patient education.

Problems of dental ill health will not be solved by the institution of partially trained personnel to provide treatment to our children. In point of fact, such an approach, in this area, would be a retrograde measure within a profession which in the last few years has so altered its concept of dental training that its graduates are educated to practise preventive dentistry in its broadest concept.

Highly trained dentists and ancillary dental hygienists, utilizing the achievements of research activities and providing treatment services to families rendered appreciative to the value of sound dental health because of active dental public health educational programmes, is unquestionably the only positive approach to an amelioration and eventual defeat of our present dental disease problem. A tangible appreciation of this concept by provision of more teaching facilities for the training of the necessary personnel is a most urgent requirement of the authorities concerned.

Book Review

Fixed Partial Prosthesis by Joseph E. Ewing.

Published by MacMillan & Co. 208 pages.
Price \$6.00.

This latest book of Professor Ewing of Temple University is a worthy addition to the rather meagre library dealing with crown and bridge prosthesis.

It is one of the most comprehensive volumes to the dental profession, covering every phase of the subject.

Included are chapters on "Examination and

Diagnosis", "Indications and Contra Indications", Treatment Planning, Abutment Preparation, Pontics, and the Direct and Indirect Impression Technique. The use of hydrocolloid is dealt with in detail.

Each procedure is profusely illustrated setting out every step with vivid clarity. Full laboratory measures are explained concisely with pitfalls to be avoided, and reasons for failures aptly described.

The volume closes with a full chapter on case designing. This chapter will serve as an excellent guide to the general practitioner where doubt may exist as to what form of fixed bridge should be employed.

W. D. Cavanagh

See the March issue of the *Journal of the Canadian Dental Association* for complete Convention programme.

The Association

Blue Cross Plan Reaches Objective

The required number of C. D. A. members applied for Blue Cross benefits by November 30th which was the final date for receiving applications. The benefits went into effect on December 31st. In the meantime those who have applied, holding Blue Cross contracts under other arrangements will be transferred to the new plan without financial loss. The next date for receiving applications will be announced in due course. All inquiries relating to the Blue Cross Plan are to be addressed to C. D. A. Pension-Assurance Plan, P.O. Box 70, Brockville, Ontario.

British Columbia Increases C.D.A. Fee

Official information has been received from the Registrar of the College of Dental Surgeons of British Columbia "that at the meeting of the Council of the College on November 18, 19 and 20 last it was unanimously agreed that in consideration of the splendid work being conducted by the Canadian Dental Association that the grant of the College of Dental Surgeons of B.C. for the year 1955 be \$20.00 in respect of each member of the College practising dentistry in this province."

Fluoridation Equipment For Individual Households

A considerable number of inquiries have been received respecting the availability of equipment for the fluoridation of the water supply for individual households. Some of these inquiries state that salesmen for equipment intended for this purpose state authorization by various authorities for use of such equipment. In at least one case, a manufacturer has requested sanction of his equipment by the Canadian Dental Association. The request was refused. This Association has made inquiry of each authoritative body named in the various communications on this subject and all have denied any authorization or recommendation of

such equipment. Solution to this problem is desirable but up to the present time to the best of our knowledge no method has been found to fluoridate the water supply of individual households with safety and effectiveness.

Fluoridation Notes

- Saskatoon and Regina, Sask. voted on fluoridation of water supply on November 3rd last, Saskatoon voted in favour and Regina said "No."
- Point Claire, P.Q. has installed equipment and will be the first municipality in the Province of Quebec to fluoridate its water supply.
- According to newspaper reports Vancouver is the first city in Canada to allow private homes to fluoridate their own water supply.
- Brantford report for 1954 on fluoridation indicates continuation of trend in the nine year experiment.

Prepaid Dental Care for 600,000 Persons in U.S.

According to a survey issued by U.S. Federal Department of Health, Education and Welfare, nearly 600,000 persons are eligible for dental care under prepaid health plans in the United States. Many of these plans are group practice clinic plans which serve union members only. A break-down of coverage by type of plan showed 363,000 workers and dependants are eligible for dental care under employer-employee plans; 62,000 under union plans; 147,000 under community-wide plans; 14,000 under consumer plans and 9,000 persons under fraternal plans.

Injunction Against U.S. Mail Order Laboratories

On November 15th last decision was made in Superior Court at Chicago to issue permanent injunctions against twenty-five dental laboratories in the State of Illinois.

This decision is a victory for organized dentistry and ethical laboratories. The results are far reaching and benefi-

cial to the public at large in improving dental services. For many years mail order denture activities have been reported in different parts of Canada. Invariably the laboratories engaged in this nefarious practice have been situated in the Chicago area. The court decision now handed down should prohibit further activity on the part of these laboratories.

Pamphlet on Oral Cancer Available

Through the generosity of the National Cancer Institute of Canada an additional supply of the booklet entitled "Mouth Cancer and The Dentist" has been presented to the Canadian Dental Association. This publication has been in demand and on request another printing was run. The booklet is well illustrated in colour and of real educational value. Single copy is available on request to:

Canadian Dental Association, 234 St. George St., Toronto. Ont.

Stomatological Society of Greece

We hereby have the honour to inform you that the IInd Panhellenic Congress will be held in Athens, September 25th-30th, 1955.

The central subjects which will be mainly discussed are:

1. Social Dentistry.
2. Pedodontia (Prevention — Fluorine).

3. Periodontal Diseases (Treatment).

4. Dental Nosology. (Root Canal Therapy).

The above subjects will be enriched with free communications, clinical demonstrations, film shows, and a rich exhibition of dental firms.

It is probably known to you the decision of the F. D. I. to hold a special meeting in Athens at the same time with the IInd Panhellenic Congress making it an international convention.

Our Greek colleagues wish to assure you that they will be glad if they are given the chance to welcome you to our country and that they will make every endeavour to make your sojourn in Greece most pleasant and comfortable.

In order to facilitate your trip to Greece, the Society is trying its best to achieve the best reduced rates on both transportation and Hotel accommodations of which you will be advised as soon as possible.

With the most friendly colleagues' greetings,

B. STEFANOPOULOS-VRETTOS,
President of the Stomatological
Society of Greece.

Th. Mavrogordatos,
President of the
IInd Panhellenic
Congress.

The Library

Additions

BAINES, J.: Dental administration of nitrous oxide-oxygen. 1944. 71p. illus.

FERGUSON, H. W.: The Toothland ABC. 1954. 30p. illus.

HUNT, A. D.: Letters to a Doctor's Secretary. 1952. 75p.

JAPAN'S SCIENCE COUNCIL AND
MINISTRY OF EDUCATION.

Japan Science Review; Medical Sciences; abstracts. Vol. I, 1953. 564p.

JAPAN'S SCIENCE COUNCIL AND
MINISTRY OF EDUCATION.

Japan Science Review; Medical Sciences; bibliography. Vol. I, 1953. 263 p.

MILLER, RAY A.: Smart young women are choosing dental hygiene as a career. 1953. 66p. illus.

THE NUTRITION FOUNDATION, Inc., N. Y.: Present knowledge in nutrition. 1953. 122p.

SCHWARTZMAN, G. ed.: The effect of ACTH and cortisone upon infection and resistance. 1953. 203p. illus.

U.S. DEPT. OF AGRICULTURE: Proceedings of National Foods and Nutrition Institute. 1953. 161p.

U.S. DEPT. OF HEALTH.—Education and Welfare: Schools of Public Health Service. Report on Schools of Public Health in the United States, based on a survey of schools of Public Health in 1950. By L. S. Rosenfeld, M. Gooch, and O. H. Levine. 1953. 110p.

Survey of Dental Practice in Canada—1954

Part II—Income of Dentists by Location and Age

(In the statements to follow the "mean" income will be referred to. The mean is obtained by adding the incomes and dividing by the number of incomes added. Mean and average have the same meaning.)

Net income, as defined in the questionnaire, includes all income from dental services rendered by the dentist less actual expenses incurred and before income taxes are deducted. The mean net income in 1953 of the one-third of Canadian dentists who made reply to the questionnaire was \$7,541.00. The mean net income of salaried dentists was \$5,783.00.

The mean gross income of Canadian dentists making the return was \$14,617. The mean net income as a percentage of mean gross income amounted to 51.6%. This means that the income before taxes are deducted of the average dentist amounted to 51.6% of each dollar received in fees.

TABLE I

Mean Income of Independent Dentists by Province
1953

Province	Mean Net Income	Mean Expenses	Mean Gross Income	Mean Net as Per Cent of Mean Gross
Blank	9590	6900	17143	56.0
British Columbia	8454	8535	17235	49.1
Alberta	8141	8308	16139	50.4
Saskatchewan	9313	7507	16980	54.8
Manitoba	7337	6787	14049	52.2
Ontario	7901	6280	14802	53.4
Quebec	5816	4968	12189	47.7
New Brunswick	8062	7020	15168	53.2
Nova Scotia	6015	4716	10834	55.5
Prince Edward Island	5856	5977	12923	45.3
Newfoundland	6902	7215	14115	48.9
Other	7104	6293	13827	51.4
Canada	7540.9	6708.1	14617	51.6

Salaried Dentists

Mean Net Income 5783

cda '54 survey of dental practice

The variation of mean income is shown by provinces in table I. It will be observed that British Columbia leads all provinces in mean gross income but Saskatchewan leads in mean net income. This is caused by the fact that expenses of operating a practice in British Columbia (50.9%) are higher than in Saskatchewan (45.2%).

In Table I the listing of "blank" indicates returns where the dentist failed to indicate on the questionnaire his province. The listing of "other" indicates returns from those dentists practising in Canada but not in one of the provinces. The percentage return for both these items was small and may be disregarded for comparative purposes but were included in the overall averages.

It will also be noted that in Table I that when the mean net income and the expenses are added the result is not always the mean gross income given. The explanation is that in some returns net income only was given and others only expenses or gross income, sometimes two items only. In tabulating all figures given on the questionnaire were used, as giving the most accurate result, hence the variation.

TABLE II

Percentage Distribution of Dentists by 1953 Income Level

Net Income Level	All Dentists	Independent Dentists	Salaried Dentists
Blanks	6.5	7.4	0.4
1- 949	1.3	1.0	3.0
950- 1949	2.3	2.1	3.3
1950- 2949	4.0	3.6	6.6
2950- 3949	5.6	6.1	2.1
3950- 4949	5.9	5.7	6.6
4950- 5949	10.1	8.0	23.1
5950- 6949	12.9	9.7	33.9
6950- 7949	11.0	10.9	12.0
7950- 8949	8.8	9.5	4.1
8950- 9949	7.2	8.1	1.2
9950-10949	7.1	7.9	2.1
10950-11949	5.1	5.9	0.4
11950-12949	3.8	4.4	0.4
12950-13949	2.0	2.2	0.4
13950-14949	2.2	2.5	
14950-15949	1.0	1.1	
15950-16949	0.7	0.8	
16950-17949	0.5	0.6	
17950-18949	0.5	0.6	0.4
18950-19949	0.3	0.4	
19950-24949	0.8	0.9	
24950-29949	0.2	0.3	
29950 & Up	0.2	0.3	
Total	100.0	100.0	100.0

cda '54 survey of dental practice

The percentage distribution of dentists by 1953 net income level is shown in Table II. It will be observed that 50% of dentists reported a net income between \$4950. and \$9949. The percentage reporting net incomes above \$14949. was small although reports were received of net incomes as high as \$29,950. and up. 33.9% of dentists on full-time salary received between \$5950. and \$6949. The highest salaries reported fell in between \$17,950. and \$18,949.

TABLE III

Mean Net Income of Independent Dentists by size of City
1953

City Size	Per Cent of Respondents	Mean Net Income
Blanks	.8	6761
Under 1000	1.5	5515
1000 to 2500	4.9	5429
2500 to 5000	8.4	6182
5000 to 10000	10.4	6624
10000 to 25000	12.1	7930
25000 to 50000	9.9	7881
50000 to 100000	8.1	8294
100000 to 250000	14.1	8266
250000 to 500000	8.5	8563
500000 & Over	21.3	7812
Total	100.0	

cda '54 survey of dental practice

Table III indicates the mean net income of independent dentists by size of city for the year 1953. It will be noted that the highest net income was made in cities of 250,000 to 500,000 population. The variation in net income was not great in cities with population between 50,000 and 500,000 but for both smaller and larger cities the drop is noticeable.

TABLE IV

Mean Income of Dentists by Age
1953

AGE DENTISTS	ALL DENTISTS	INDEPENDENT DENTISTS	SALARIED DENTISTS
	Mean Net Income	Mean Net Income	Mean Net Income
Blank	5089	5478	10298
25-29	5934	6297	12435
30-34	7587	7901	15612
35-39	9098	9272	17462
40-44	8347	8694	16165
45-49	8332	8431	16171
50-54	8057	8344	16595
55-59	7087	7120	12800
60-64	6210	6286	11930
65-69	4667	4597	12854
70-74	3476	3553	8024
75--	2519	2519	6449

cda '54 survey of dental practice

The relationship between age of the dentist and income is shown in Table IV. Income of dentists between the ages of 35 and 39 inclusive is indicated as being considerably higher than for other age groups. Among full-time salaried dentists the highest salaries are reached at a later age (45 to 49). The falling-off of the income of dentists after age 54 is rather drastic. It may be of significance to observe the net as percentage of gross for dentists 65 years of age and over, as this may indicate to some extent an effect of the rising expenses of operating a practice during recent years.

TABLE V

Independent Dentists
1953 Net Income Related to Year of Graduation

Year of Graduation	Mean Net Income
Blanks	6531
1904-1908	4558
1909-1913	4161
1914-1918	4943
1919-1923	6658
1924-1928	6979
1929-1933	7966
1934-1938	8694
1939-1943	8844
1944-1948	9453
1949-1953	8320
	6732

cda '54 survey of dental practice

The age at time of graduation is not uniform. In order to relate mean net income to the number of years in practice Table V is presented which indicates the year of graduation related to mean net income. Graduates of the years 1939-1943 inclusive had considerably higher net income than for any other years of graduation. Graduates previous to the year 1924 are shown to have received much less income during 1953 than those who graduated during the next following years.

TABLE VI

Estimated Total Income of Dentists in Canada
(Thousands of Dollars)

	1944	1953
Number of dentists	3,279	4,950
Gross Income	26,547	72,354
Net Income	13,610	37,328
Salaried Income	844	2,024
Total Net Income	14,454	38,352

cda '54 survey of dental practice

As stated earlier a survey of dental practice was conducted in 1945 (See Part I of this series). Similar methods of collecting data were employed in both surveys. Table VI is formed by using a table published in the previous survey and for comparative purposes placing figures derived from the present survey in an adjoining column. 1944 was a war year and the 3279 dentists represented those in civilian practice. It is estimated that there were for the year 1953, 4950 dentists in private practice and 350 on full time salary.

It will be observed that the total gross income of dentists in 1953 is indicated as being over 2½ times greater than in 1944 (a ten year period). It should not be interpreted that the public received this increased amount of dental services. Dollar volume represents an increase in amount of service but consideration must be given to the fact that fees for service increased during this period, as will be shown later in this series.

(This part is the second in a series on the 1954 Survey of Dental Practice. The third part will follow in a subsequent issue.)

Committees and Councils

Publications Committee

The policy of the Publication Committee and the Editors is to give Canadian dentists a journal of the highest character as to scientific papers, reader interest and quality. Our problems in this respect are not with the lack of editorial material, scientific papers and so forth, our Editors are doing a wonderful job. It is the financial aspect, at the moment, which concerns us. We are continually faced with rising costs, due to increases in labour and materials. Originally the advertising in the Journal to a large extent defrayed the costs of publication, whereas today the Association has to bear a large part of it. As of the first of the year we are asking our advertisers to accept an increase in cost of advertising space; this will only partially assist the financial picture. If we are to expect a continuation

of a desirable journal we as an association will be obliged to further underwrite the cost of its publication.

The Journal is the front page or show window of Canadian dentistry and we should be prepared to meet the obligations of its cost.

A survey regarding the Journal has recently been conducted to ascertain the opinion of the profession regarding the different aspects of the Journal. It will be interesting to read the report of this survey which is presently being tabulated and should be ready for publication in the near future.

It is not advisable to make drastic changes in the content, make up or format continually, but in order to refresh the appearance of the Journal the January issue greets you in a new colour.

Frank Martin, Chairman

The Corps

Brigadier E. M. Wansbrough attended the annual meeting of the Military Surgeons of America in Washington, D.C. from 29 November 1954—4 December 1954. During this period he made liaison visits with the Dental Directors of the U.S.A. Army, Navy and Air Force and the U.S. Naval Dental School at the National Naval Medical Centre.

Lt-Col. H. L. Harris won the silver cup for the low gross score in the golf tournament held during the C.D.A. Convention at St. Andrews-by-the-Sea.

Colonel C. B. Climo inspected service facilities in Central Command during November.

The Royal Canadian Dental Corps March was played publicly for the first time at the Garrison Ball in Ottawa on Friday, December 3, 1954. The March composed by Neil Chotem was officially accepted by the Corps during the summer of 1954 and will be distributed to all regimental bands in the Canadian Armed Forces.

Colonel George L. Cameron, DSO, OBE, VD (retired) of Ottawa, has been appointed Honourary Colonel Commandant of the Royal Canadian Dental Corps, it was announced by National Defence Headquarters.

He succeeds Brig. F. M. Lott, CBE, ED, whose tenure of appointment expired recently.

A McGill graduate in dentistry (the class of 1908), Colonel Cameron has enjoyed a long and distinguished association with the Canadian Army.

He was a captain in the 7th Light Horse (NPAM) at the outbreak of the Great War (1914-1918). In France he served with the 9th Canadian Mounted Rifles and the 1st Canadian Infantry Battalion attaining the rank of major. He was wounded, mentioned-in-despatches in the field and was awarded the Distinguished Service Order. Subsequently he was appointed to the Canadian Army Dental Corps and served as Assistant Director Dental Services in Canada until he was demobilized in December 1920.

Colonel Cameron continued his army association after 1920 as a member of the Reserve Army. In August 1939, he was returned to the Active Force as a lieutenant-colonel in the Canadian Army Dental Corps. In January 1943, having previously been appointed Deputy Director of Dental Services at Army Headquarters, he was promoted to the rank of colonel. In the Birthday Honours list of June 1944, he was appointed an Officer of the Order of the British Empire.

Colonel Cameron retired from Active Service in November 1945.

Economic Security

A Comparison of Investment Trusts with Assurance

by E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.,

Consulting Economist, and Administrator
of the C.D.A. Plan.

Mention has been made in earlier Articles in this series of the difficulties encountered by the individual in investing without danger of capital loss. The smaller the amount of capital, the greater the danger: safety lies in diversification. For example, the great Carnegie Foundation never permits more than two to three per cent of its normal funds to be invested in any single *class* of security, other than Government bonds. As a result, there is no more successful fund in existence.

For the ordinary individual, such diversification by direct investment is an impossibility. It is possible to provide the small investor with diversified investments through "investment trusts", or "specialists" and there is much merit in this as it provides the small investor with a safety through diversification which he otherwise could not have. In addition, he has the advantages of the services of investment experts who have both the training and the full time to devote to the problem. It seems beyond

question that, notwithstanding the fact that he must deduct the expenses of the management of the trust from his profits, the small investor will do better through the trust than he is at all likely to do through individual direct investment.

Two questions remain, however: First, is there yet another investment medium which will provide equal or greater safety, with greater profit. Second, how does this form of savings also meet the other economic problems of the professional man?

From figures 1 and 2 it will be seen that as regards guaranteed results, the two forms of saving are approximately equal with a slight balance in favour of assured pensions. It is possible that the investment trust may produce further dividends; it also is equally or more likely that individuals now in the younger ages will live beyond the present normal life expectancy. The investment trust produces an *exhaustible* retirement income; the pension an *inexhaustible* one. One can live too long for an investment trust's results; he never can outlive pension.

But these forms of pure savings are meeting one only of the professional man's economic problems—that of retirement income. What about the problem of

I. Comparison As Pure Investment

	AGE 30 to AGE 65		AGE 50 to AGE 65	
	Investment Trust	C.D.A. Plan	Investment Trust	C.D.A. Plan
1. Annual Saving	166.40	166.40	817.50	817.50
2. Guaranteed Cash at 65	10,360.00	10,049.00	15,000.00	15,082.00
	Taxable	Non-taxable	Taxable	Non-taxable
3. Pension at 65	62.20	63.20	92.25	97.30
	(Ends in 16.45 yrs.)	(So long as living, 10 years guaranteed)	(Ends in 16.45 yrs.)	(So long as living, 10 years guaranteed)
4. Value of pension at Normal Life Expectancy of 16.45 years from age 65	12,278.00	12,475.00	18,265.00	19,207.00

II. Comparison of Separated and Combined Insurance and Investment

	AGES 30 to 65		AGES 50 to 55	
	Investment Trust Plus Term	C.D.A. Plan Pen.-Assur.	Investment Trust Plus Term	C.D.A. Plan Pen.-Assur.
1. Annual Sum to be saved	413.10	413.10	1,023.80	1,023.80
2. Life Insurance to 65	10,000.00	10,000.00	10,000.00	10,000.00
3. Annual Premium	67.00	17.80	206.30	52.20
4. Family Income, monthly for balance of 20 yrs.	200.00	200.00	—	—
5. Annual Premium	179.70	132.00	—	—
6. Balance for Pure Savings	166.40	263.30	817.50	971.60
7. Guaranteed Cash at 65	10,362.00	15,900.00	15,000.00	18,150.00
8. Pension at 65	Taxable	Non-taxable	Taxable	Non-taxable
	62.20	100.00	92.25	117.00
	(Ends in 16.45 yrs.)	(So long as living, 10 years guar- anteed)	(Ends in 16.45 yrs.)	(So long as living, 10 years guar- anteed)
	(Interest & principle)		(Interest & principle)	
9. Value of Pension at Normal Life Expectancy of 16.45 yrs. at 65 ..	12,278.00	19,740.00	18,265.00	23,095.00

NB: The above figures give the results for equal savings and equal protection over equal periods.

dying too soon? The usual answer is "separated investment and life insurance." What is the actual comparison?

Thus in meeting the dual economic problem, the balance swings decidedly in favour of the combined assurance and pension savings. The figures for the in-

vestment trust are taken from the prospectus of the most favourable scheme which has come to our attention. In next month's Article, questions asked concerning the comparison of "participating" and "non-participating" assurance will be answered.

*While at the C.D.A. - O.D.A. Convention
Plan to attend the....*

SUNDAY EVENING MUSICALE

Concert Hall, Royal York Hotel

A delightful programme of Opera Miniatures

Directed by GEORGE CRUM

ARTISTS:

Patricia Snell—Soprano

Ernest Adams—Tenor

Irene Loosberg—Mezzo-Soprano

Andrew MacMillan—Baritone

The Provinces

Saskatchewan

The **Saskatoon Dental Society** welcomed as a new member Dr. D. Halliday. He is a recent graduate of McGill Dental College and is practising with his father-in-law Dr. R. Toren.

Officers elected to the **Moose Jaw Dental Society** for the year are:

President, Dr. Wm. Mullen; Vice-Pres., Dr. Ron Mullen; Sec. Treas., Dr. Fred Cooper.

Arrangements have been made for the visit of Dr. MacGregor, and plans made also for the programs for the year.

Officers elected to the **Saskatchewan Dental Council** for the year are:

Dr. W. F. Hancock, Ft. Qu'Appelle; Dr. J. P. White, Swift Current; Dr. A. Duff Leask, Moose Jaw; Dr. F. Smith, Saskatoon; Dr. W. Watchler, Yorkton.

The question of **Fluoridating the communal water supply of the city of Regina** was placed before the Council in June of 1952, by the Fluoridation Committee of the Regina Dental Society. At that time the Council passed it almost unanimously (one exception) and tenders were called for the necessary equipment to fluoridate the water supply.

Unfortunately, as we were in the process of obtaining a new water supply for the city, it was decided that the fluoridation equipment would be installed at the new filtration plant, otherwise our water would have been fluoridated like Moose Jaw without the question being put to a plebiscite. However, due to some engineering difficulties our new water supply was held up for two years.

During this time, a group of citizens calling themselves the "Anti-Fluoridation League" were organized under the Presidency of Miss Lulu M. Barr, a worker at the Junior Red Cross. This group of Anti's canvassed the city house to house with a petition against fluoridation and spreading propaganda about the dangers, such as, poisoning, brittle bones, mottled teeth, etc. They presented this petition signed by some 12,000 residents along with a brief to Council on March 9, 1954.

The Regina Dental Society was asked to

present a brief to Council on March 16, 1954. This brief was presented to a Council which had changed since 1952 and was reluctant to commit themselves to such a controversial question, and so put fluoridation to referendum.

Immediately the fluoridation committee of the Regina Dental Society, and the Provincial Department of Public Health, with a program of radio talks, press coverage, Home and School Meetings, tried to educate the public to vote intelligently.

The referendum was defeated 11:7 on November 3, 1954. The Fluoridation Committee feel that we dentists have done all we can, and the reopening of the question should rest with another group.

Dr. S. A. (Sandy) McGregor, Head of the Department of Children's Dentistry, Faculty of Dentistry, University of Toronto, and Chief of the Dental Division of the Hospital for Sick Children, Toronto, Ont., has completed a tour of the Province of Saskatchewan under the auspices of the Saskatchewan Dental Association.

Dr. McGregor spent ten days in Saskatchewan and conducted meetings at Swift Current, Moose Jaw, Regina, Yorkton, Saskatoon, Prince Albert, and Estevan.

Besides holding clinics for the Dentists, Dr. McGregor spoke to Parent Groups, Service Clubs, Teachers' Colleges, and over the Radio. He conducted from two to five lectures in each centre on "Dental Health for your Child and Mine."

His lectures which were illustrated with slides were the result of years of intensive study, experience, and teaching and were received with great enthusiasm by the audiences at all centres.

The Saskatchewan Dental Association has purchased recordings of each of the five telephone lectures from the University of Illinois and will circulate these each month to all of the Dental Societies throughout the province this winter.

L. D. H.

Alberta

The November meeting of the **Lethbridge and District Dental Society** was held at the El Rancho Dining Room on Nov. 3rd. The Executive for the coming year will be: President, Dr. F. T. Wood; Vice-President, Dr. E. D. Erickson; Sec. Treasurer, Dr. D. A. Rylands. The golf committee were

commended for the successful golf tournament which was held last September when the Dave Bowman trophy was won by Dr. W. P. Craig. Dr. D. A. Rylands was selected as chairman for Dental Health Week. An interesting review of Alberta Dental Association Affairs was given by Dr. A. Ahrens and this was followed by a table clinic on "Duralay Inlay Patterns," by Dr. L. T. Allen. Besides the local dentists, Dr. G. H. Gibb from Vulcan and Dr. Willigan from Pincher Creek attended the meeting.

D. A. R.

At the November meeting of the **Calgary Dental Society**, the guest speaker was Dr. C. Spencer Lea, M.B.E., who delivered an illustrated lecture on the subject "Cavity Form." Dr. Lea's talk dealt mainly with cavities prepared for the reception of the silver amalgam restoration. The speaker in closing reminded the members that if one expends his utmost in preparation of the cavity, this same expression of care and skill will be carried through to completion of the restoration.

It was announced at this meeting that Premier E. C. Manning will be the guest speaker at the Edmonton Dental Society meeting on December 7th. A bus has been chartered and about 25 members of the Calgary Dental Society will travel to Edmonton for his address: an expression of splendid professional and public relations.

In addition to Premier Manning, the President of the Alberta Dental Association, Dr. James Zimmerman will speak on the same program.

G. C. S.

The **Alberta Research Council** received and accepted a special committee's report on fluoridation of public water supplies at their annual meeting.

Hon. Gordon E. Taylor, minister of highways and council chairman, stated that the contents of the report could not be released until after they had been considered by the provincial cabinet which authorized the council to make the fluoridation survey. He indicated that the report is exhaustive in its survey of the fluoridation question, and that the study has been carried out over two years.

The special committee was headed by Dr. N. H. Grace, research director, and the other members were L. H. Bussard, superintendent of schools, Lethbridge; Dr. M. M. Cantor, provincial coroner; Dr. O. J. Walker, professor of chemistry at the University of Alberta; Dr. H. R. MacLean, Dr. D. R. Stanley of Edmonton, and J. C. Mahaffy of Calgary.

New Brunswick

The **New Brunswick Dental Society**, at its 59th annual meeting held recently, elected the following officers: President, Dr. R. H. Bingham, Moncton; vice-president, Dr. E. J. Leger, Bathurst; secretary-registrar, Dr. S. K. Wetmore, Saint John. Council members are: Drs. B. Duguay, H. B. Fleming, R. F. Sansom, J. B. Sutherland, D. Boudreau, W. B. O'Brien, L. P. Maillett, G. L. Ramsey, D. C. Steeves, C. A. Hayward and H. H. Peters.

The Society reaffirmed its approval of the fluoridation of communal water supplies and continued to urge all organized communities to adopt this public health measure.

British Columbia

The **College of Dental Surgeons of B.C.** which holds examinations twice a year announces that eight candidates were successful in passing the tests for the right to practise in the province.

Plans are under way for the annual convention of the **British Columbia Dental Association** to be held in Vancouver in May. In charge of the convention is Dr. Harry Purdy, who has as his program chairman Dr. M. J. Waterman. Featured essayists will include Dr. John W. Knutson, chief dental officer of the U.S. Public Health Service.

Twenty members of the **Vancouver and District Dental Society** are on the dental surgery staff of the **Children's Hospital**. Under the present organization each dentist donates two half-days a month of his time to care for the children's teeth. Six years ago the service was broadened to include general anaesthesia for full-mouth rehabilitation of spastic children and also surgery, periodontia and orthodontics. The present chief-of-staff is Dr. C. W. Gardner, who is busy enlarging his group to reduce the required clinic work per man to once-a-month. Valuable training and experience, along with the satisfaction that comes from donating a necessary charitable service, is assured to dentists in this field of endeavour.

The Fall convention of the **Interior Dental Society** was held in the Kelowna Community Health Centre on October 30th with a large attendance. Dr. Harold Henderson presided and Dr. Kenneth Geis, the secretary, took care of the clerical duties.

Dr. W. R. Scott of Vancouver lectured in the morning on "Dental Economics," stress-

ing office management and the selection of dental assistants. In the afternoon, he gave his talk on "Occlusal Equilibration" with illustrations of full-mouth reconstruction cases.

At the evening banquet in the Golf Club after the customary refreshments and thick steaks Dr. Leon Coursier expatiated upon Dental Association affairs; Dr. W. G. Hall gave pertinent information regarding the new policy of the Division of Preventive Dentistry; Dr. Fred Parmley, a member of the Council, discoursed on College affairs.

New officers elected:

President: Dr. F. J. Netherton

Vice-President: Dr. G. J. Cameron

Secretary: Dr. W. I. McIver

December's meeting of the **Fraser Valley Dental Society** was held in the Langley Hotel and was addressed by Dr. Clay Hallman, prosthodontist of Vancouver. The enthusiastic attendance was gratifying, says Secretary Dr. David Vogt.

D. H. M.

Dr. Douglas J. Sutherland, Vancouver, was honoured by the American College of Dentists at its Annual Convocation in Miami on November 7, when a Fellowship was conferred on him.

Quebec

The Montreal Section of the **American Academy of Dental Medicine** is sponsoring a Medico-Dental meeting on Monday January 31st, 1955, at 8.15 p.m. in the Assembly Hall of the Medical Bldg. of McGill University.

This meeting will be in the form of a seminar in which seven physicians and dentists will participate. The panel will consist of: Dr. John W. Gerrie, Professor of Oral Surgery at McGill University and Director of the Department of Plastic Surgery at the Montreal General Hospital who will act as Moderator; Dr. Donald R. Webster, Professor of Surgery and Director of Experimental Surgical Laboratory of McGill University and Chief Surgeon of the Royal Victoria Hospital; Dr. Louis Lowenstein, Assistant Professor of Medicine at McGill University; Dr. Alberic Marin, Professor of Dermatology at the University of Montreal; Dr. A. Gerald Racey, Professor of Oral Pathology at the University of Montreal and Associate Professor of Oral Pathology at McGill University; Dr. Robert Wiener, Lecturer of General Pathology and Oral Surgery at McGill University; and Dr. Jean Paul Lussier, Professor of Dental Medicine at the University of Montreal.

The topic to be discussed is "PHYSICIAN AND DENTIST MEET THE PATIENT."

Dr. Adelard Groulx, Director of Health for the City of Montreal will participate in the discussion.

Dr. Louis J. Rosen, President of the Montreal Section of the Academy will preside.

The meeting will be open to all members of the Medical and Dental Professions and it is hoped that all possible will avail themselves of the opportunity of attending.

"PRACTICAL ENCEPHALOMETRICS" was the title of an illustrated lecture delivered by Dr. Howard T. Oliver to fellow members and guests of the Montreal Section of the **American Academy of Dental Medicine** on Monday, November 29th.

Dr. Oliver recently spent some five weeks in Europe and the Middle East delivering talks on the above subject and is certainly well qualified to interpret the subject to the profession.

The construction of a home-made encephalostat has been described in the April 1948 issue of the *Journal of Orthodontics*. Dr. Oliver claims that with the use of this and the x-ray machine present in every office, any one can avail himself of the possibilities in this field.

Dr. Oliver stated that it is only in comparatively recent years that orthodontists have become conscious that relating the inclined planes of the teeth to their opponents can hardly be called adequate treatment, but that the entire face must be considered. The advent of cephalometrics opened a very important source of information to study growth of the face and understand better the changes resulting from orthodontic therapy.

A point that Dr. Oliver repeatedly stressed was that the use of cephalometrics must be considered an **aid** in determining prognosis and assisting in planning treatment; it is not intended to replace any accepted methods of diagnosis and examinations—but it can and should be used to complement such procedures.

Dr. Oliver's presentation was well illustrated by slides, photographs, x-rays and drawings.

R. F. H.

The opening dinner meeting of the **Montreal Dental Club** was held Monday, November 15th at the Queen's Hotel; President Frank Edward was in the chair.

The programme consisted of a **CANCER SYMPOSIUM**, discussion being centered on the colour film "Oral Cancer" produced by the American Cancer Society. The panel of experts was headed by Dr. John W. Gerrie, prominent plastic surgeon, Professor of Oral

Surgery, McGill University and Director of the Tumour Clinic, the Montreal General Hospital. Other panel members were Dr. William Matthews, Assoc. Pathologist of the M.G.H.; Dr. John Palmer, surgeon and Asst. Director of the clinic; and Marvin Loughheed, radiation therapist.

Many interesting features of modern cancer diagnosis and treatment were brought out in discussion, a complete report of which is planned for a later issue of The Journal.

Dr. Loughheed's demonstration of radiation proximity using Geiger counter and a radium needle was followed by questions from the floor.

Dr. Geo. M. Dundass thanked the speakers of the evening. J. A. R.

At the last meeting of the **Provincial Board of Dental Surgery** held on October 29th, 1954, Dr. D. V. Plamondon was elected President of the College of Dental Surgeons of the Province of Quebec to succeed the retiring president, Dr. J. W. Abraham.

At the same meeting, Dr. V. Dube was elected 1st Vice-President and Dr. E. S. Dorion 2nd Vice-President. D. F.

"Ask the Doctor," a programme presented by the C.B.C., featured Drs. Donald Gordon and Wilfred Johnston of Montreal on the November 18th edition. Questions similar to those asked by many patients were addressed to the above. First reports indicate that the programme was very well received and that, as was to be expected, Drs. Johnston and Gordon handled themselves like professionals (radio).

Dr. Victorien A. Dube of Montreal was honoured by the American College of Dentists at its Annual Convocation in Miami on November 7, when a Fellowship was conferred on him.

Ontario

The **Annual Winter Clinic of the Toronto Academy of Dentistry** was held on Thursday, November 25, in the Royal York Hotel.

This year 497 dentists registered, of which 156 were from points outside metropolitan Toronto. The popularity of this meeting is gaining ground very quickly and it is especially gratifying to the Committee to see the membership of out-of-town dentists showing such a sharp increase from year to year. This increase in attendance is a tribute to the hard-working members of the Winter Clinic Committee. This year this

group was headed by the president-elect of the Academy, Dr. Bev. King.

As Dr. King is a member of that famous class of 2T3 it was especially significant that the speaker of the day should also bear allegiance to that group. Dr. Russell A. Williams of Miami, Florida, presented an outstanding address to the luncheon meeting.

Dr. F. G. Anderson, president of the Canadian Dental Association, brought greetings of the organization as well as enunciated some of the values of the C.D.A. Blue Cross Plan.

The scientific programme of the day provided the utmost in variety to suit the varied tastes of those present. Dr. Albert Antoni took as his subject "Newer Concepts in Oral Surgery"; Dr. Wilfred Clark of Hamilton again presented one of his able presentations in the general field of prosthodontics. Dr. S. W. Leslie dealt with "Newer Drugs in the Dental Therapeutics," and urged his audience to write more prescriptions.

Dr. R. D. Leuty, speaking on the orthodontic problems that confront a general practitioner, stressed the part that habits play in the creation of abnormalities within the mouth. Dr. M. E. Lucyk, always a willing contributor, once again had a lecture on endodontics which was filled with helpful hints in this field. Dr. K. J. Paynter presented an improved technique for testing pulpal response to filling materials. Jacket crown preparations were discussed by Dr. J. B. Pepper, and Dr. Donald L. Rife explained the evaluation of paedodontics by the general practitioner. Antiformin treatment received the attention of Dr. H. Murray Robb, and Dr. M. N. Rockman once again presented a lecture on the "Problems in Radiographing the Child Patient." Dr. William Shand showed the "Possibilities of Full Crowns in Operative Dentistry and also in Partial Prosthesis."

The Oral Surgery Group from the Faculty of Dentistry, Toronto, presented a symposium on "Recent Developments in General Anaesthetics in Dentistry."

The interest that hypnosis has aroused, especially its application to the practice of dentistry, was clearly shown by the capacity audience which greeted Dr. Harold Mason of Galt.

For the dental practitioner who was looking for something to do in his spare time, Mr. John Bingham from Aikenheads Hardware Limited had some interesting projects; Mr. J. D. Dearment of Canadian Industries Limited led a discussion on "Small Arms" and their use.

Following the evening dinner there was a further period of table clinics and demonstrations by professional members, nurses,

and assistants, together with displays by the dental dealers.

All in all, this was truly a day filled with opportunities.

W. A. W.

Dr. James P. Coupland of Ottawa, Dr. T. Howard Graham and Dr. James G. Perkin, both of Toronto, and Dr. Arthur R. Poag of Hamilton, were honoured by the **American College of Dentists** at its Annual Convocation in Miami on November 7, when Fellowships were conferred on them.

At the same meeting, Dr. Don W. Gullett, Secretary of the Canadian Dental Association, was elected to the Board of Regents.

Twenty members and guests attended the **Brockville Dental Society** dinner held recently at Maitland. Dr. D. L. Anderson of the University of Toronto was the guest speaker, and his subject was "Periodontology."

Dr. B. F. Nott of North Bay, who has been associated in many capacities with Free Masonry for nearly 50 years, was recently honoured by the Nipissing Lodge No. 420, with a testimonial dinner and presentation.

Some 200 members of various Masonic Lodges in Northern Ontario heard several speakers, including the Rt. Rev. W. L. Wright, D.D., bishop of the Anglican Diocese of Algoma and deputy grand master of the Grand Lodge of Canada in the Province of Ontario, pay tribute to Dr. Nott and his unstinting efforts on behalf of Masonry.

Two members of the **Faculty of Dentistry**, University of Toronto, participated in a postgraduate seminar held recently in Welland. The seminar was sponsored by the Ontario Dental Association's Dental Public Health Committee.

Dr. Gordon W. Johnston lectured on operative procedure for the general practitioner, including techniques in such operations as preparation of the cavities for treatment. Dr. Marjorie Jackson's subject was practical paedodontics for the general practitioner.

Dr. R. E. Feasby, who practised dentistry in Simcoe for nine years, has taken over duties as head of the recently created division of the Kingston Department of Health. The post was created to give more emphasis to the program of preventive dentistry which has been started in Kingston.

Giving impetus to the program and to the hiring of a dental officer was the program carried out last year in all the elementary schools by the dental public health committee.

Dr. Feasby's duties will be directed initially towards conducting surveys and with educational work in the elementary schools. Emphasis will be on developing better dental habits in children.

Dr. Feasby graduated from the University of Toronto in 1940, and until 1944 served with the Canadian Dental Corps. For nine years, he then engaged in private practice in Simcoe before returning to the University of Toronto last Fall and gaining this spring a diploma in Dental Public Health.

During the summer Dr. Feasby visited England, where he had an opportunity to observe the nationalized health service and to examine the operation of the administrative end of this program.

A past commander of the Port Dover Power Squadron, he is also a member of the Port Dover Yacht Club, a former director of the Simcoe Rotary Club, and a Member of St. James United Church. He and Mrs. Feasby have one daughter, Nancy, age 9.

At a meeting of the **Kingston and District Dental Association** held Wednesday night, October 20th, 1954, election of officers for the coming year was held.

Dr. S. H. Watson was elected president and Dr. John D. Lyon, vice-president. Secretary for this year will be Dr. H. R. Campbell and Dr. W. H. Treleaven will be treasurer, and Dr. R. E. Feasby will be publicity.

Two new members were introduced, Dr. F. Sorenson, who is engaged in general dental practice, and Dr. R. E. Feasby, who is commencing duties as dental officer of health with the city health department.

Plans were discussed for the meetings to be held for the coming year. It is hoped by the executive, to have another joint meeting with the dentists of Watertown.

A demonstration of the well-known advice that life should not be all work, with no play, was given Saturday night, November 13th, 1954, when members of the **Kingston and District Dental Society** were shown a film, "A Canadian Cruise."

It was the society's "Ladies' Night." The dinner and meeting were held at La Salle Hotel, followed by a dance.

Dr. L. R. Braden, of Ottawa, president of the Ontario Dental Association, explained some of the activities of the association, and then demonstrated the value of hobbies by

showing the film, which concerned his hobby, boating. The movie was made during a cruise from Kingston to Ottawa by Dr. Braden and his family, and many of the scenes were familiar to the audience.

Guests were present from Picton, Belleville and Napanee. Dr. S. H. Watson, president of the Kingston society, was in the chair.

At a meeting of the **London Dental Society** held in November, more than 60 members heard the retiring president, Dr. D. E. Cousins, introduce the new executive, and Dr. C. L. Strachan present a report on recent activities of the Canadian Dental Association.

The new executive is: Dr. J. A. Guest, president; Dr. R. J. Sutherland, vice-president; Dr. A. J. Harris, secretary; and Dr. W. H. Mason, Treasurer.

The guest clinician at the meeting was Dr. Corwin R. Wright, of the University of Michigan, who presented a paper on complete denture prosthesis. He was introduced by Dr. T. D. McColl, and thanked by Dr. W. R. Morris.

At the November meeting of the **Ottawa Dental Society** Dr. Bruce Squires spoke on gingival recession as one of the chief causes of tooth decay. He illustrated his talk with coloured slides and charts. Dr. George Clarke introduced the speaker, who was thanked by Dr. C. H. Bugden. Dr. L. R. Braden, president of the Society, presided at the meeting.

It is with regret that we record the death of **Mrs. James Clare**, daughter of Dr. Harry S. Thomson. Mrs. Clare passed away in Guelph, Ontario, on November 17th, 1954. She is survived by her husband and three children, James, Peter, and Janet.

The sympathy of all members of the Canadian Dental Association is extended to Dr. Thomson, the first Canadian president of the American College of Dentists.

In the recent municipal election held in Aurora, **Dr. Elmer Henderson**, past president of the Academy of Dentistry, Toronto, was elected to the office of Mayor.

General News

Dr. Daniel F. Lynch, of Washington, D.C., was formally installed as president of the **American Dental Association** in Miami, Fla., on Nov. 11 at the close of the Association's 95th annual session. Dr. Lynch succeeded Dr. Leslie M. Fitzgerald of Dubuque, Ia. Dr. Bernard C. Kingsbury, of San Francisco, was unanimously chosen as president-elect. Total registration at the meeting was 11,262, one of the largest in the history of the A.D.A.

Dr. Curtis A. Haggard, of Miami, who served as chairman of the General Committee on Local Arrangements for the 1954

meeting, was elected first vice-president. Dr. Frederick W. Herbine, of Reading, Penn., was elected second vice-president, and Dr. John E. Fauber of Washington, D.C., dental director for the Veterans Administration, third vice-president. Dr. Harry E. Lyons of Richmond, Va., dean of the Medical College of Virginia School of Dentistry, was re-elected Speaker of the House of Delegates. Dr. H. B. Washburn, of St. Paul, Minn., was reappointed treasurer. All of the elections were by unanimous vote of the House of Delegates.

British Commonwealth News

News has been received that Dr. J. Menzies Campbell of Glasgow, W.2, Scotland, has been elected a Fellow in Dental Surgery (without examination) of the Royal College of Surgeons of Edinburgh.

Also that, at the third annual meeting of

the *American Academy of the History of Dentistry*, held in Miami, Florida on November 5, 1954, he was unanimously elected an honorary member, in recognition of his "outstanding contributions to the history of dentistry."

In Memoriam

Thomas Nodwell McGill—Dr. Thomas Nodwell McGill of Mimico, Ontario, passed away on November 24th, 1954.

After graduating from the Royal College of Dental Surgeons of Ontario in 1900, he practised in Toronto until 1935, when he retired.

Dr. McGill was a noted bicyclist and won many races and trophies.

He is survived by his wife, Edith Olive Hall; a son, Eric; and two sisters, Mrs. Florence Polliott, and Mrs. Harry Baker of Daytona Beach, Fla.

Frederick Ernest Babcock—Dr. Frederick Ernest Babcock of Milton, Ontario, passed away on November 24th, 1954, at the age of 60.

Born in Odessa, Ont., Dr. Babcock received his early education at Napanee. He graduated from the Royal College of Dental Surgeons of Ontario in 1920, and, after attending the Eastman School Clinic for six months, he practised in Milton for thirty-four years.

During the first world war Dr. Babcock served overseas with the Canadian Army Dental Corps.

In 1944 he gave assistance in establishing a programme of dental health services for young children. He was secretary of the Milton Golf and Country Club, 1925-35, president of the Milton Hockey Club from 1922-28, and a member of St. Clair Lodge, A.F. and A.M., the Rotary Club, Order of the Eastern Star, the Milton Branch of the Canadian Legion, and the Grace Anglican Church.

Dr. Babcock is survived by his wife, Helen Mills, and one son, Kent.

James Campbell Guthrie. — Dr. James Campbell Guthrie of Port Elgin, Ontario, passed away on November 21st, at the age of 56.

Born in Renfrew, Ont., Dr. Guthrie received his early education in that town. He graduated in 1923 from the Royal College of Dental Surgeons of Ontario, and practised in Ottawa, from 1923-27; Wiarton, 1928-30; Kincardine, 1931-39; and in Port Elgin from 1939-40, and since world war II.

During the first world war, Dr. Guthrie served as a sapper in the 3rd Canadian Tunnelling Company, Canadian Engineers. In world war II he served as a Major at Camp Borden.

Dr. Guthrie was a member of the United Church.

He is survived by his wife, Anne Mitchell; one son, James Peter; and two daughters.

Walter Harold Ross of Saint John, New Brunswick, died suddenly in hospital after a brief illness on September 3rd 1954. He was a veteran of the first world war serving in England in the C.A.D.C. as a technician. In 1942 he was granted a license to practice dentistry. He is survived by his wife, two daughters and four grandchildren.

Earl S. Millett.—Dr. Earl S. Millett of Dartmouth, N.S. died on November 12th, 1954, at the age of 62.

Dr. Millett was born in Falmouth. He practised in Dartmouth for more than 30 years.

During world war I Dr. Millett served overseas with the Canadian Dental Corps, attaining the rank of Captain. He was a member of the Somme Branch, Canadian Legion, and Cornwallis Lodge, A.F. and A.M.

Surviving are three sisters; Annie of Balzac, Alta; Mrs. Bessie Hawboldt, Halifax; Mrs. Estelle Johnston, Mystic, Conn.; and one brother, Avon, also of Balzac, Alta.

J. L. Gibson.—Dr. J. L. Gibson of Calgary passed away on November 4th, at the age of 75.

Dr. Gibson was born in Kitchener, Ontario. He practised in Calgary for many years, and retired in 1950.

A well-known hockey player, Dr. Gibson played with and organized the champion Portage Lake hockey team in Houghton, Michigan. In 1905 he was selected to the all-American hockey team. Besides hockey, he starred in baseball, soccer, lacrosse, cricket, rowing, skating, swimming and football.

Francis Pollock—Dr. Frank Pollock passed away in Kelowna General Hospital on November 9, 1954 at the age of 71. Born in Ripley, Ontario, he graduated from the R.C.D.S. in 1908. After graduation he practised in Listowel, Ontario for two years, and in 1910 the lure of the West brought him to Vancouver where he practised until his retirement.

Dr. Pollock was a charter member of the Kerrisdale Lodge A.F. & A.M., the Point Grey Club and the Kerrisdale Bowling Club.

In 1929, after a serious operation, he suffered from asthma, and as a result his activities were curtailed and his part became that of an onlooker.

Retiring in 1951 (after 43 years of practice), he settled in Kelowna where he lived quietly and happily enjoying the quietness and intimacy of the smaller city.

Surviving are his widow, one son, Allan E. of Kelowna, two daughters and four grandchildren. In Ontario he is also survived by two brothers and one sister.

JOINT MEETING

THE CANADIAN DENTAL ASSOCIATION
THE ONTARIO DENTAL ASSOCIATION

Royal York Hotel, Toronto

Board of Governors: May 11-14, 1955

Convention: May 15-18, 1955

ADVANCE REGISTRATION AND HOTEL ACCOMMODATION

The Registration Fee for the Profession is \$20.00 Advance Registration facilitates convention arrangements and therefore, saves your time.

Hotel reservations MUST be made directly with the hotel of your choice.

C.D.A. - O.D.A. Convention Registration Form

Applicant:

Name
(please print)

Address
.....

I will be attending Convention alone? Yes No

I will be accompanied by my wife? Yes No

My cheque for the REGISTRATION FEE (\$20.00) payable at par, Toronto is enclosed.

(Sign here)

MAKE CHEQUE PAYABLE TO: "The C.D.A. - O.D.A. Convention Account"

MAIL APPLICATION FORM AND CHEQUE TO: Mrs. Peggy Booker,
Treasurer,
234 St. George Street,
Toronto, Ontario.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1955	Toronto, Ontario	May 15th — 18th
1956	Banff, Alberta	June 3rd — 6th
1957	Winnipeg, Manitoba	June 23rd — 26th

FUTURE EVENTS

Date	Function	Location	Officer	Address
Jan. 20	Academy of Dentistry	Toronto	Dr. J. Bevan King	1414 Danforth Ave., Toronto, Ont.
Jan. 25	Annual Alpha Omega Lectureship	Toronto	Dr. H. M. Jolley	4 Madison Ave., Toronto, Ont.
Feb. 18.	Dentistry-At-Home.	Royal York Hotel, Toronto.	Mr. G. S. Bowles	230 College St., Toronto.
Mar. 9-10	Tufts College Dental School Alumni Association Annual Mid-Winter Meeting	Boston	Dr. Nathan Fink	Tufts College Dental School Alumni Association, 186 Harrison Ave., Boston 11, Mass.
May 15-18	Joint Convention C.D.A.-O.D.A.	Toronto	Dr. Don W. Gullett	234 St. George St., Toronto, Ont.
June 19-23	Annual Berkshire Conference	Lennox, Mass.	Dr. Irving Glickman	Tufts College Dental School, 136 Harrison Ave., Boston 11, Mass.

SHORT GRADUATE COURSES

Date	Course	Location	Address
Mar. 7-11	Endodontics	University of Toronto	The Dean, Faculty of Dentistry University of Toronto, 230 College St., Toronto 2-B.
Mar. 7-12	Anaesthesia & Oral Surgery	University of Montreal	Dean, Faculty of Dental Surgery, University of Montreal, P.O. Box 6128, Montreal, P.Q.
Mar. 7-12	Crown and Bridge	as above	as above
Mar. 14-19	Endodontics	as above	as above
Mar. 14-19	Operative Dentistry	as above	as above
Mar. 14-19	Periodontics	as above	as above
Mar. 14-19	Prosthetics	as above	as above
Mar. 14-19	Radiodontics & Diagnosis	as above	as above
Mar. 28- Apr. 1	Orthodontics	University of Toronto	The Dean, Faculty of Dentistry, University of Toronto, 230 College St., Toronto 2-B.
Apr. 11-15	Orthodontics (for the Specialist)	as above	as above
Apr. 25-29	Periodontics	as above	as above
May 2-6	Dental Oral Surgery & Anaesthesia	as above	as above

CLASS AND FRATERNITY FUNCTIONS

Class	Function	Date & Time	Place	Officer
2T3	32nd Reunion Dinner	May 16 6.30 p.m.	P.D.R. 9 Royal York Hotel	Colton Bliss, 170 St. George St., Toronto, Ont.
2T5	30th Reunion Dinner	May 16 6.30 p.m.	P.D.R. 8 Royal York Hotel	Lloyd M. Grose, 663 Greenwood Ave., Toronto, Ont.
3T0	25th Reunion Get- together Party (with wives)	May 15 4.00 p.m.	138 Lytton Boulevard	Bill Dewar, 138 Lytton Blvd., Toronto, Ont.
3T0	Reunion Dinner	May 16 6.30 p.m.	Library, Royal York Hotel	as above
5T0	5th Reunion Party	May 16 (Class members will be notified of further details)	Will be notified of further details	Ewart A. Jones, 11 Barker Ave., Guelph, Ont.
Alpha Omega Fraternity	Annual Closing Dinner	May 16 6.30 p.m.	Tudor Room, Royal York Hotel	Ben Gross, 816 Bathurst St., Toronto.

NOTICES

Applications will be received up to March 1st for the graduate course in Orthodontics at the University of Toronto. The course commences on September 1, 1955, and continues for a period of two academic years. Enrolment is limited to four graduates of approved dental schools. The applicants must possess satisfactory scholastic standing acceptable for enrolment for the Master of Science degree in the School of Graduate Studies of the University of Toronto. For further information and application forms address all inquiries to: The Dean, Faculty of Dentistry, University of Toronto, 230 College St., Toronto, Ont.

University of Montreal, Faculty of Dentistry, announces that the next post-graduate course in Orthodontics will start on September 6, 1955, and will continue for a period of 16 months. Enrolment is limited to five graduates of approved dental schools. This course is given in English and French languages and is under the direction of Dr. Paul Geoffrin, Professor and Head of the Department of Orthodontics.

Post-graduate course in Anaesthesia and Dental Oral Surgery. The Oral Surgery Department of the University of Montreal runs a graduate course of one-year duration leading to a certificate, under certain conditions.

This course starts in September. It covers basic sciences and clinical work on patients in relation to that specialty. The course is given in both English and French and the candidate has the liberty to write his paper in his own language.

For further information and application forms, address all inquiries to: Dr. Ernest Charron, Dean, Université de Montréal, 2900 Mount-Royal Blvd., Montreal, P.Q.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Le status actuel des foyers d'infection d'origine dentaire

par ROGER BRUNELLE, B.A., D.D.S., Montréal

Introduction:

Le concept d'infection focale chronique comme une cause de maladie constitutionnelle relève déjà d'à peu près un tiers de siècle. C'est en avril 1912 que Frank Billing rapporta ses convictions sur le sujet. Plusieurs années plus tôt, William Hunter, de Londres, avait éveillé l'attention au danger d'infection dans la cavité buccale et avait cru qu'une telle infection était une cause d'anémie, de troubles gastro-intestinaux et de certaines infections pyogéniques généralisées. Il restait à Billing de formuler la doctrine d'infection focale chronique comme nous la connaissons aujourd'hui.

Billing a résumé ses opinions comme suit:

1—un foyer d'infection se définit comme "une zone circonscrite de tissu infecté avec des microorganismes pathogènes."

2—le terme d'infection focale implique que:

- a) un tel foyer d'infection soit présent,
- b) que l'infection soit bactérienne,
- c) et que, comme telle, elle puisse être

disséminée, conduisant à une infection organique ou à une infection d'autres parties contigües ou non contigües.

3—le foyer d'infection peut être localisé dans n'importe quelle région du corps, souvent dans la tête: dans les abcès alvéolaires, dans l'abcès amygdalien ou périamygdalien ou dans la sinusite chronique, soit encore, dans la vésicule biliaire, l'appendice, les trompes de Fallope, les vésicules séminales ou la prostate, ainsi que dans l'abcès subcutané ou sous-muqueux non localisé.⁽¹⁾

A côté de Billing, qui fut l'un des plus inlassables travailleurs qui développa le concept d'infection focale, il faut aussi noter que Charles H. Mayo, lui-même, a soutenu la théorie d'infection focale, croyant que la sepsie buccale jouait un grand rôle dans la production de maladie somatique. C'est lui qui a affronté la profession avec ses opinions. Le grand pas suivant dans la progrès médical en vue de la médecine préventive devait être fait par le dentiste.⁽²⁾

Mécanisme:

Rosenow⁽³⁾ a démontré la transmuta-

bilité des microorganismes du groupe streptococcus-pneumococcus qui a été fait en vue d'une meilleure compréhension de la pathogénicité changeante de ces bactéries. Il a déduit qu'une telle transformation pourrait se rencontrer dans le foyer d'infection, soit dans l'approvisionnement d'oxygène des tissus, soit par la croissance dans la symbiose avec les autres microorganismes. Il introduisit aussi le terme de "localisation élective" pour le mode d'infection et tenta de prouver expérimentalement que l'injection de traces de streptocoques obtenus de patients souffrant d'arthrite chronique, de fièvre rhumatismale avec endocardite et péricardite, de myosite, d'ulcères peptiques, de cholécystite, produisait des lésions semblables chez les animaux. Cette affinité, toutefois, n'est pas exclusive: ceci veut dire que des traces individuelles dans un grand nombre d'expériences va attaquer un organe défini plus souvent qu'un autre. Rosenow a annoncé le fait intéressant que le temps cataphorique et la vélocité des streptocoques avaient une importance étiologique et qu'il y avait un parallélisme étroit entre localisation élective et la vélocité cataphorétique.

Holman ⁽⁴⁾, dans une revue critique au sujet de la localisation élective, dit qu'une adaptation bactérienne générale à l'environnement est acceptée par tous, mais, il sent que les facteurs du côté de l'hôte sont plus variables et, pour cela, de beaucoup plus importants. Il arrive aux conclusions que les facteurs déterminant la localisation des bactéries, qui sont entrées dans le courant sanguin, sont ceux qui altèrent la circulation, particulièrement ceux qui modifient l'endothélium des capillaires et, par là, affectent la nutrition des cellules des tissus concernés.

Le travail de Rosenow a été confirmé par Haden ⁽⁵⁾ qui a beaucoup écrit sur le sujet, et qui, dans la dernière édition de son monographie "Dental Infection and Systemic Disease" évalue le status actuel de l'infection dentaire en relation avec la médecine. Il a bien montré que, dans les deux dernières décades, l'éducation des dentistes, des médecins et du public au danger des dents infectées a rapporté des

résultats avantageux. Avec la grande décroissance de l'incidence de l'infection dentaire, le foyer dentaire joue un rôle moins important aujourd'hui qu'il y a vingt ans.

Causes:

Les causes d'infections secondaires sont les bactéries dans le foyer infectieux qui peuvent être localisées n'importe où dans le corps humain. Des bactéries virulentes peuvent être libérées et être propagées en aucun temps, produisant une maladie sérieuse et souvent irréparable dans d'autres parties du corps. D'un autre côté, les toxines bactériennes, quand elles sont absorbées, peuvent causer des réactions organiques de nature allergique. La propagation des bactéries est grandement augmentée par l'extraction des dents. Richards ⁽⁶⁾ a trouvé que la bactériémie causée par les foyers chroniques peut être démontrée par la manipulation des foyers avant de prendre une culture de sang. Ainsi, il a constaté que plusieurs cas, qui étaient négatifs, sont devenus positifs lors de la manipulation de ces foyers.

Burket et Burns ⁽⁷⁾ ainsi que Palmer et Kempf ⁽⁸⁾, Hopkins ⁽⁹⁾, Northrup et Crowley ⁽¹⁰⁾, ont démontré que l'extraction des dents, en grand nombre, spécialement chez les patients qui ont une résistance faible, peut causer une bactériémie, laquelle peut initier une infection métastatique.

Faillio ⁽¹¹⁾ a rapporté que l'extraction des dents infectées est habituellement suivie immédiatement par une leucopénie et sub-séquemment par une leucocytose. Dans 40% des cas, il a observé une bactériémie. Quelquefois, les causes et les effets sont difficiles à observer; cependant, la maladie peut avoir une attaque insidieuse, j'entend ici la maladie secondaire, et même peut ne pas se manifester pour des semaines ou des mois, quand l'incidence de l'extraction a été oubliée.

Localisation des foyers d'infection:

Les foyers d'infection peuvent être ancrés dans plusieurs parties du corps et souvent des infections métastatiques agissent comme foyer après que la lésion primaire a été enlevée. On considère, en général, que les foyers sont localisées dans la tête plus souvent que n'importe où ailleurs. Le

nez, les sinus accessoires et la gorge (les amygdales) sont les régions importantes.

Les infections chroniques sont particulièrement communes dans la cavité buccale, l'incidence augmentant avec l'âge du patient. Pour montrer combien des patients ont souffert d'infection dentaire chronique au temps où le diagnostic radiographique est venu en usage, il faut voir les statistiques de Black⁽¹²⁾. Il a fait ainsi des tables de trois cents patients qui faisaient examiner leurs dents de façon routinière et non pas parce qu'ils souffraient de troubles dentaires.

TABLE XXX

Age	No de patients	Moyenne en nombre de dents par pers.	% des personnes ayant de l'inf. aux maxillaires
Moins de 25 ans	86	30	56
25-29 ans	53	29	72
30-39 ans	68	26	87
40-49 ans	53	25	89
50 et plus	40	23	100

Il n'y a pas de doute que l'incidence serait considérée moindre aujourd'hui. Des différentes infections buccales, les pulpites aigues et chroniques avec ou sans infection périapicale, sur les deux dentures, dents temporaires et dents permanentes, jouent un rôle très important et je dirais même le plus important. De telles infections sont, règle générale, de début assez récent, et, souvent, les symptômes dentaires peuvent être en relation avec l'apparition de la maladie secondaire. Les infections périapicales sur les dents avec traitement de canal partiel ou complet, indiquant une ablation et un traitement d'une pulpe infectée, sont de deuxième importance.

Le granulome ou le kyste (qui sont tous deux bien encapsulés) joue un rôle important comme foyer infectieux. Il faut noter que ces lésions ne sont sujettes à des exacerbations inflammatoires qui peuvent détruire la membrane pyogénique, mais qu'il y a possibilité constante d'absorption hémato-gène par les vaisseaux sanguins qui s'étendent dans les lésions.

Quelques auteurs pensent que les infections périapicales sont de légère importance parce qu'il y a possibilité de drainage à la bordure gingivale. Ceci, toutefois, est erroné; des processus inflammatoires se produisent constamment dans le tissu au-dessus des poches et, souvent,

des abcès tissulaires se forment. Miller⁽¹³⁾ dit que les poches périapicales sont des facteurs beaucoup plus portés à produire des maladies d'infection focale parce que:

1—une beaucoup plus grande zone est engagée que dans l'abcès périapical, en considérant toute la surface des parois de toutes les poches. On peut établir d'une façon certaine que la surface d'absorption est vingt fois plus grande dans la moyenne des cas de maladie périapicale que dans un abcès périapical chronique bien développé.

2—l'absorption du sillon gingival est plus rapide, puisque l'irrigation sanguine et lymphatique à la gencive est beaucoup plus grande qu'à la zone périapicale au niveau de l'os, spécialement quand cette dernière est entourée par un léger degré de condensation ou d'encapsulation.

3—la résistance à la croissance bactérienne est moindre dans le sillon gingival que n'importe où dans la cavité buccale à cause de la nourriture et de la stagnation.

Dans les bouches d'une hygiène buccale pauvre, les débris de nourriture sont retenus spécialement dans les sillons profonds, dans les poches périapicales et sous les restaurations. La carie de matériel organique s'ensuit, et le nombre des bactéries s'accroît grandement. Puisque la chaleur et l'humidité sont toujours présentes dans la bouche, l'addition d'aliments et des différentes tensions d'oxygène produites dans les maladies périapicales font un milieu d'incubation idéal. Selon Billing⁽¹⁴⁾, certains types de bactéries qui se trouvent dans l'arthrite déformante et dans la myosite croissent mieux quand il y a une faible tension d'oxygène ou quand il n'y a pas d'oxygène libre; et des conditions telles que celles-là peuvent se trouver au fond des sillons gingivaux profonds et dans les poches périapicales.

Paquin⁽¹⁵⁾ a récemment établi que, dans un traitement chirurgical de périodontologie, des complications post-opératoires peuvent se produire à cause de l'invasion bactérienne du courant sanguin par le *Staphylococcus Viridans* causant la mort dans plusieurs cas de lésions cardiaques, particulièrement dans l'endocardite bac-

térienne sub-aigue. Les autres maladies mentionnées par différents auteurs provenant de foyers buccaux sont celles qui impliquent le système cardio-vasculaire, le système des voies respiratoires, le système lymphatique, les organes excréteurs, la voie gastro-intestinale, le système nerveux, les muscles, l'oeil, l'oreille et le nez.

Des observations ont été faites par des chercheurs à savoir que certains types d'organismes qui sont présents dans la bouche peuvent, si les conditions sont convenables, se changer d'une forme à une autre, spécialement s'ils sont transportés vers un nouvel endroit. Ainsi, ils prétendent qu'un streptocoque peut se changer en pneumocoque ou en streptocoque viridans, or un bacille peut se changer en spirille. Ils ont aussi émis l'opinion que le même organisme est capable de causer différentes maladies, tout dépendant de l'endroit où il prend naissance.

S'il n'y a pas de mouvements des tissus ou de la langue, les organismes peuvent rester localisés pourvu qu'il n'y ait pas eu d'absorption par le système sanguin et lymphatique. Toutefois, tout mouvement dans la bouche va pousser le matériel infectieux vers la gorge et le pharynx. L'acte de mastication qui met en contact les dents de l'arcade supérieure et inférieure crée une action de pompe des dents atteintes de trouble périodentaire, et ceci est suffisant pour faire pénétrer les bactéries dans le courant sanguin et lymphatique et dans les tissus sous-jacents.⁽¹⁶⁾

Elliot⁽¹⁷⁾ a démontré que, chez les patients avec des bouches septiques, le simple mouvement d'une dent était suffisant pour causer une bactériémie dans 86% de ses cas; et même, dans les bouches propres, il a établi qu'il y avait une réaction semblable dans 25% des cas.

Round⁽¹⁸⁾, Kirkpatrick et Hails ont montré qu'il se produisait une bactériémie passagère par la simple action de mastication. Ils ont établi que "non seulement l'absorption alvéolaire, avec formation de poche subséquente comme résultat, constitue un véritable foyer d'infection en lui-même, mais une absorption accrue de toxines peut être apportée pendant la mastication par l'action de pompe sur les

désordres gingivaux surplombant ces poches. Semblablement, nous considérons que l'action de mastiquer apporterait une bactériémie transitoire."

De plus, des complications peuvent se produire chez des individus sujets aux changements de pression d'air. Par exemple, les foyers d'infection d'origine dentaire doivent être éliminés chez les équipages aériens. Coons⁽¹⁹⁾, en 1943, a discuté une infection gingivale potentielle et la possibilité de tourner un foyer d'infection douteux en un foyer actif dû aux modifications dans la pression et la tension de surface résultant en un choc aux tissus.

Voies de propagation:

Les voies par lesquelles les infections provenant des poches périodentaires peuvent se répandre sont: (20)

- 1—le courant sanguin,
- 2—les canaux lymphatiques,
- 3—la continuité des tissus,
- 4—la contiguïté des voies gastro-intestinale et pulmonaire, par la déglutition et l'aspiration de matériel infecté.

1- Par le courant sanguin:

Les gencives, de par leur abondante vascularisation, alimentent la membrane périodentaire, l'os alvéolaire et le stroma de tissu conjonctif, et permettent ainsi une sortie immédiate d'organismes et de toxines des poches périodentaires.

2- Par les canaux lymphatiques:

Il y a une alimentation abondante à la gencive et aux tissus mous, et l'infection peut promptement atteindre les ganglions lymphatiques avoisinants. Puisqu'il y a plusieurs liaisons entre les différents ganglions lymphatiques, la propagation de l'infection le long de cette voie est grandement facilitée et l'infection peut passer à n'importe quelle partie de la tête, du cou, ou à travers le canal thoracique et les veines sous-claviculaires pour aller aux autres parties du corps. On croit que les capillaires sont entourés par des vaisseaux lymphatiques et qu'ainsi les toxines sont absorbées et pénètrent dans les vaisseaux sanguins. Miller établit que "ces vaisseaux sanguins sont les voies physiologiques pour le transport des substances provenant des tissus. Dans les

conditions pathologiques, ce sont les voies par lesquelles les bactéries, toxines ou cellules tumorales sont transportées aux différentes parties du corps."

3- *Transmission par continuité des tissus:*

L'extension directe de l'infection peut prendre place par l'intermédiaire de la propagation de matériel septique ou d'organismes dans l'os lui-même ou le long des plans faciaux et du tissu conjonctif dans les sentiers de moindre résistance. Le dernier type est la cellulite vraie; le pus s'accumule dans les tissus, détruit le tissu conjonctif lâche, crée des espaces, exerce de la pression et s'étend jusqu'à ce qu'il rencontre une barrière anatomique.

4- *Transmission par les voies gastro-intestinale et pulmonaire:*

La cavité buccale est en communication directe avec le reste du canal alimentaire, la cavité nasale et l'appareil respiratoire. Le pus libre qui coule des tissus péri-dentaires infectés peut passer vers l'arrière et être avalé ou inhalé vers les bronches ou les poumons, ou encore, se loger dans le naso-pharynx. Ainsi, il en résultera des nasopharyngites, des infections pharyngiennes et des abcès du poumon. La déglutition de matériel septique peut causer des troubles gastro-intestinaux tels que: constipation et ulcération. Tout facteur prédisposant peut conduire à faire activer un mal latent dont le plus fréquent est l'ulcère, le long du tractus gastro-intestinal. Les ulcères commencent à la muqueuse et progressent dans les tissus plus profonds; puis l'irritation bactérienne cause une aggravation* de la condition.

Pour ce qui regarde les ulcères, Andersen⁽²¹⁾ a établi qu'il n'y a pas de cure permanente, et qu'il n'y a aucun soulagement permanent dans la maladie de la vésicule biliaire, dans l'appendicite ou la colite, sans l'ablation de tous les foyers d'infection. Stevens⁽²²⁾, de son côté, a dit "que toutes les maladies dentaires doivent être corrigées avant d'opérer les ulcères pép-tiques."

Microbes en cause:

Les bactéries que l'on trouve dans l'infection focale appartiennent habituellement au groupe streptocoque-pneumo-

coque. Dans les lésions péri-dentaires, nous rencontrons:

1- *en profondeur:* le *Streptococcus viridans*, le *Staphylococcus aureus* et *albus*, le *Streptococcus hemolyticus*, et des amibes

2- *en bordure:* des *Streptococci*, des *Staphylococci*, des *Pneumococci*, des *Diplococci*, des *Bacilli* et des *Amibes*.

Dans les maladies gingivales chroniques, nous rencontrons: des bacilles fusiformes et des spirochètes de Vincent.

Ces bactéries sont peu virulentes, mais, occasionnellement, elles produisent une toxicité considérable. Les organismes virulents peuvent se multiplier dans le sang quand ils manifestent une septicémie aigue ou chronique; s'ils ne se multiplient pas dans le sang, ils sont envoyés vers les tissus pour lesquels ils ont une affinité (Rosenow)⁽²³⁾ ou qui, dû, à une résistance amoindrie, leur fournissent une opportunité favorable à leur croissance. (Holman)⁽²⁴⁾.

Quelque soit la méthode, si les bactéries passent dans le courant sanguin, il devrait être possible de les retrouver en transit dans le sang.

Considérations bactériologiques: (25)

Le mode d'action des bactéries varie avec les causes d'infection. La bactérie vivante peut se transporter d'un tissu à un autre et ses toxines peuvent être la cause de troubles, ou la bactérie désintégrée peut causer une allergie. L'excitateur peut être n'importe lequel des groupes précités. La majeure partie de ces organismes sont détruits dans le courant sanguin et lymphatique, mais quelques uns peuvent survivre. L'action bactéricide du sang et de la lymphe, l'action phagocytaire des lymphocytes et des cellules du système réticulo-endothélial, spécialement dans le foie, la rate, les poumons et la moelle épinière, aide à détruire les bactéries. Le fait que certaines bactéries échappent à la mort dans les fluides de l'organisme ou des organes ne veut pas dire qu'un foyer secondaire d'infection va se former. Il se peut que les tissus tiennent tête aux corps étrangers.

Faisons ici une parenthèse pour expliquer les réactions de l'organisme à l'égard

des microbes. L'ensemble de ces réactions est souvent désigné sous la dénomination de moyens de défense.⁽²⁰⁾ Nous éliminerons dans cet exposé certains processus qui constituent une manière de défense passive à l'égard des bactéries, comme par exemple le rôle de la barrière épithéliale ou muqueuse, qui est cependant de grande importance. Ici, entrent en jeu des principes bactériologiques ou bactéricides élaborés par l'organisme, tel le lysozyme de Fleming. Il est présent dans les larmes, le mucus nasal, la salive, le mucus du tube digestif. Isolé sous forme de protéine cristallisée par Abraham et Robinson, il représente un enzyme capable de lyser des microcoques de caractère banal, mais il est généralement sans action sur les bactéries pathogènes.

De même, nous ne retiendrons pas certains actes physiologiques qui peuvent être doués d'efficacité à titre réactionnel: hyperthermie, accélération des mouvements respiratoires et cardiaques. Il s'agira ici d'envisager les réactions cellulaires et humérales de l'organisme infecté.

Réactions cellulaires:

"La vie, dit Bordet, est le maintien d'un équilibre incessamment menacé." L'organisme tend physiologiquement à maintenir l'intégrité de son plan contre tout corps étranger, inerte ou animé, qui l'a envahi. Un grand nombre de microbes non pathogènes suscitent des réactions analogues à celles des corps étrangers inanimés, tandis que les microbes pathogènes provoquent des phénomènes plus complexes parmi lesquels, au premier plan, les diverses modalités du processus inflammatoire.

Réaction inflammatoire cellulo-vasculaire:

Elle est vis-à-vis d'un germe microbien, variable selon l'intensité de l'aggression, la nature et les poisons du germe. Cependant, on y retrouve toujours les mêmes phases intriquées qu'une analyse quelque peu artificielle permet seule de dissocier.

1—C'est d'abord l'atteinte des cellules avec multiplication et métamorphose des éléments de tous les tissus, mais surtout du tissu conjonctif.

2—Suivie d'une vaso-dilatation avec exsudation séreuse et accroissement de la perméabilité des parois. Le mécanisme de ces troubles circulatoires est toujours très discuté. Pour beaucoup d'auteurs, la vaso-dilatation témoigne de l'action réflexe du système neurovégétatif, mais en l'espèce, il s'agirait d'un réflexe d'axone se déroulant intégralement à la périphérie. A vrai dire, ces réflexes seraient commandés par le jeu de certaines substances libérées dans le tissu enflammé. D'après Lewis, cette substance serait l'histamine ou quelque corps apparenté par ses propriétés pharmacodynamiques.

Le processus inflammatoire enfin peut aboutir à la fixation des germes par coagulation des protéines avec réseaux de fibrine dans les tissus atteints, ce qui détermine un blocage plus ou moins rapide des microbes soumis aux actions phagocytaires.

Phagocytose et les réactions du système réticulo-endothélial:

"Metchnikoff ne s'est pas contenté de voir l'importance de la phagocytose dans les réactions de l'organisme vis-à-vis des microbes, mais a eu la notion géniale du rôle primordial de cette phagocytose, de cette digestion cellulaire, dans le retour au plan normal de l'organisme, toutes les fois que son équilibre est menacé par la présence d'un corps étranger. Metchnikoff, il ne faut pas l'oublier, a pressenti toute l'importance en pathologie de ce qu'on a depuis désigné du terme de système réticulo-endothélial, montrant l'origine multiple des macrophages, opposant leur rôle à celui des microphages, faisant ressortir la part immense qu'ils tiennent dans la constitution des lésions observées au cours de la maladie ou des maladies infectieuses chroniques et des maladies parasitaires allant d'autre part jusqu'à faire de cette doctrine phagocytaire, la pierre angulaire de l'immunité."

Metchnikoff fit de la phagocytose une doctrine finaliste qui eut presque force de loi pendant un quart de siècle, considérant que le rôle quasi exclusif, aussi bien des microphages que des macrophages, était un acte de phagocytose, un acte de protection, un acte de défense.

Ajoutons que le système réticulo-endothélial ne peut être séparé de l'appareil neuro-végétatif qui s'y résout intimement; dès lors, les actes phagocytaires sont liés de façon étroite aux phénomènes préalables de la vaso-dilatation.

Le rôle pexique du système réticulo-endothélial compris avec les histiocytes du tissu conjonctif a conduit à étudier d'une façon toute particulière l'action qui lui est dévolue dans la constitution physiopathologique des états septicémiques.

La possibilité, pour les microbes septiques émanant d'un foyer septique, de subsister en circulation dans le sang et d'y acquérir quelque stabilité est liée à la déficience de l'appareil réticulo-endothélial, ainsi qu'en témoignent les expériences de blocage avec de l'encre de Chine, par exemple. Chez l'animal bloqué, les germes demeurent en suspension dans le sang beaucoup plus longtemps que chez le témoin, où ils subissent les actions pexiques du système réticulo-endothélial. Enfin, ce système peut être soumis à une intoxication du fait des produits toxiques provenant des germes microbiens ou des altérations cellulaires: il en résulte une véritable aréactivité de tout l'appareil réticulo-endothélial, si bien qu'à la phase terminale des septicémies on constate la pullulation des germes dans le sang et la survenue des grands signes toxi-infectieux.

Chimiotaxie:

Les phagocytes ont une sensibilité spéciale au contact d'un corps bactérien, poussant autour de lui des prolongements pour l'englober: c'est le phénomène de chimiotaxie positive.

Une étude récente pleine d'intérêt a montré les propriétés diverses des constituants chimiques des microbes sur les actes de la phagocytose. Boivin et Delaunay⁽²⁷⁾ ont bien mis en évidence, en effet, que les bactéries libèrent, quand elles sont en autolyse, des substances capables de provoquer in vivo l'afflux de leucocytes. D'une façon générale, on peut dire que les divers polysaccharides sont des substances douées d'un haut pouvoir chimiotactique, tant in vivo qu'in vitro.

Destruction intra-leucocytaire:

Aux ferments leucocytaires incombe ensuite la destruction des germes à l'intérieur de la cellule. Le comportement différent des agents microbiens à l'égard des phénomènes de la phagocytose est, par ailleurs, lié à toute une série de conditions. Les microbes peuvent, en effet, échapper aux leucocytes par leur mobilité, leur capsule, qui forme une gaine isolante et surtout par leur pouvoir de multiplication et d'adaptation aux tissus. Sans doute, convient-il de faire jouer un rôle aux facteurs locaux propres à faciliter la végétation du germe et sa diffusion; à cet égard, pour certains microbes pathogènes du moins, il faut retenir la manière dont les facteurs de diffusion, décrits par Duran-Raynals, peuvent accélérer l'extension du processus infectieux. Il s'agit vraisemblablement d'une enzyme qui se trouve dans certains corps microbiens, ainsi que dans certains organes, et qui augmente la perméabilité du tissu conjonctif au cheminement des microbes. Ainsi, ces facteurs jouent le rôle d'agésine. Les travaux récents de Chain et Duthie ont montré que cet enzyme particulier est une hyaluronidase attaquant un muco-polysaccharide, l'acide hyaluronique, présent dans le tissu conjonctif en combinaison avec les protéines. Il en résulte une fluidification de la substance fondamentale du tissu conjonctif, d'où, dans un foyer infectieux, l'envahissement progressif par les bactéries porteuses de cet enzyme.

Réactions humorales de l'organisme à l'égard des microbes:

Les propriétés acquises par les humeurs au cours des infections sont représentées par les différents attributs des anti-corps qui sont essentiellement caractérisés par leur spécificité et leur comportement. "Ils sont le témoignage de la faculté d'adaptation et d'invention de l'organisme." (Boivin).

On sait que l'on définit l'anticorps comme une globuline particulière apparaissant dans le plasma sanguin lorsqu'un antigène a pénétré dans un organisme. Cet anticorps va jouir de la

propriété fondamentale de s'unir avec la protéine-antigène et cela avec une spécificité absolue. On peut donc exprimer que chaque protéine-antigène a sa spécificité sérologique propre, à laquelle correspond une globuline-anticorps également spécifique.

Les conséquences de l'union antigène-anticorps peuvent varier dans la mise en évidence de ce phénomène essentiel, d'où les différents aspects qu'il peut revêtir. Dès qu'un antigène et son anticorps entrent en contact, ces deux principes se combinent et l'union ne se ferait pas avec un anticorps étranger.

Si on parvient à modifier la constitution chimique de la protéine-antigène, on change sa spécificité pour lui en faire acquérir une nouvelle.

Antitoxines:

Les toxines des bactéries sont antigéniques et les anticorps qui leur correspondent sont les antitoxines qui jouent un rôle si grand dans les phénomènes de protection à l'égard des poisons des bactéries toxigènes.

La combinaison entre toxines et antitoxines se traduit par un complexe insoluble de précipitation. Sur ce fait, Ramon a fondé sa méthode de floculation. Le fait capital est que le mélange qui flocule le premier est celui pour lequel a lieu l'exacte neutralisation de la toxine par l'antitoxine.

Anticorps microbiens:

Si les exotoxines, antigènes protéiniques élaborés par certains microorganismes, provoquent les antitoxines que nous venons d'envisager, les autres antigènes constitutifs des microbes peuvent faire apparaître, à leur tour, des anticorps.

Il y a des antigènes particuliers existant à la surface des bactéries qui produisent des anticorps dont les propriétés sont remarquables. On a appris qu'il existe des antigènes somatiques (O) et des antigènes flagellaires (H). Les anticorps correspondants (anticorps O et H) sont doués de propriétés agglutinantes, mais l'anticorps O présente des propriétés toutes particulières, car il est à la fois précipitant avec l'antigène comme il est

agglutinant avec les bacilles correspondants. Enfin, ils exercent une action protectrice anti-infectieuse, en sensibilisant les bactéries à l'attaque par les phagocytes: c'est l'action opsonisante.

Immunité: (28)

"On désigne, sous le nom d'immunité, l'état biologique d'un être vivant qui échappe à l'infection, lorsqu'il est envahi par un microbe pathogène virulent ou toxigène, infection frappant une autre espèce ou un autre individu de la même espèce, soumis aux mêmes causes de contagion ou aux mêmes conditions d'inoculation."

D'après les conditions où les phénomènes immunitaires sont observés, on distingue trois variétés d'immunité, selon qu'elle est naturelle, acquise ou passivement conférée.

Sans entrer dans les détails de l'immunité, nous ne donnerons ici qu'un aperçu de chacune d'elles:

Immunité naturelle:

Disons simplement qu'elle est souvent affaire d'espèce, de race, d'âge, qu'elle peut être absolue ou relative.

La question est assez difficile à résoudre lorsqu'il s'agit d'interpréter l'immunité naturelle de certains sujets pour une maladie donnée; on peut toujours se demander si l'état de résistance est constitutionnel, par le jeu de la sélection ou, au contraire, s'il n'est pas le fait d'une infection inapparente, qui aurait entraîné à l'insu de l'individu, les processus immunitaires propres à l'immunité acquise et active après évolution infectieuse; dès lors, il ne s'agirait plus d'une immunité naturelle et spontanée puisque le sujet en aurait fait personnellement les frais à la suite d'une infection occulte. La présence d'anticorps dans le sérum de ces individus ferait volontiers penser qu'ils ont été atteints de cette infection sans symptômes, point de départ de l'immunité dont ils sont porteurs, mais, pour juger de cette question, il faut souvent se souvenir qu'un sérum normal peut contenir des anticorps analogues à ceux d'un immun-sérum lesquels agissent sélectivement sur un antigène déterminé.

Immunité acquise:

Cette immunité s'observe vis-à-vis des germes bactériens ou des virus, dans des conditions très différentes les unes des autres. Tantôt elle succède à une maladie toxigène, microbienne ou à un ultra-virus, spontanément contracté et dont l'organisme a triomphé. Tantôt, enfin, elle est acquise expérimentalement par acte de vaccination anti-microbienne ou anti-toxique.

L'immunité acquise se manifeste par des caractères qui lui sont propres; elle est le résultat d'un processus dont l'organisme fait les frais; aussi apparaît-elle après certains délais nécessaires à sa constitution progressive. Elle est solide, dure en général plusieurs années, et la récidence exceptionnelle ne se produit que tardivement. Elle peut, cependant, dans certains groupes d'infection, n'être que transitoire. Rappelons, d'autre part, que, pour diverses autres maladies, une première atteinte laisse plutôt subsister un état de sensibilité et les cliniciens connaissent les récurrences de la pneumonie, de l'érysipèle et des manifestations staphylococciques.

Tout ceci montre qu'on ne peut généraliser à toutes les infections les notions qui paraissent vraies pour quelques unes. Selon la nature des parasites, les réactions de l'organisme sont éminemment variables.

Immunité passive:

L'immunité est dite passive lorsque le sérum de l'organisme peut jouir de la propriété de conférer à un organisme neuf la même résistance vis-à-vis de l'infection. Quelles que soient les conditions dans lesquelles on observe cette immunité, elle offre toujours des caractères analogues. En effet, elle est obtenue très rapidement, mais elle n'est qu'éphémère; sa durée ne dépasse pas vingt à trente jours; elle ne persiste que tant que le sérum injecté n'a pas été complètement éliminé. Dans l'immunité passive, l'organisme n'intervient en rien. Il est simplement le dépositaire des substances protectrices qu'il reçoit toutes préformées.

N'étant en somme que l'immunité active transférée, l'immunité passive se

confond avec celle-ci pour ce qui concerne le rôle des anticorps.

Allergie dans les infections: (29)

On désigne sous le nom général d'allergie, l'état dans lequel se trouve un sujet antérieurement infecté et qui subit une seconde fois l'atteinte du germe microbien ou de ses produits.

Les réactions allergiques ont donné lieu à maintes explications et demeurent l'objet de bien des discussions. Pirquet en a fourni une interprétation en soutenant que le premier contact infectieux faisait naître dans l'organisme un anticorps dénommé *ergène* à fonction bactériolytique. Il aurait comme caractère de se combiner à toute nouvelle dose de l'antigène inoculé pour donner naissance à un produit secondaire toxique: l'apotoxine qui détermine la réaction clinique immédiate (réaction précoce). C'est l'excitation locale des substances lytiques qui explique les réactions d'hyperergie. La thèse de l'allergie pour Pirquet est apparentée à celle de la maladie du sérum, mais dans les maladies qui créent l'immunité comme la vaccine, le fait que l'état allergique apparaît chez un sujet immun serait le double témoignage de deux processus spécifiques associés d'immunité et de sensibilisation. Il s'agirait d'un complexe.

De cette conception se rapproche Bordet, qui y voit également phénomène d'hypersensibilité et d'immunité. Pirquet a attiré l'attention sur les ressemblances qui unissent la maladie du sérum d'une part et, d'autre part, les intradermo-réactions provoquées avec des antigènes microbiens ou des antigènes divers. Mais bien vite on s'aperçut que dans de nombreux cas où l'allergie existait on ne pouvait mettre en évidence un anticorps circulant (*ergène*). Dès lors, l'assimilation entre l'anaphylaxie et l'allergie, telle que la concevait Pirquet, devait être remise en discussion. Fallait-il admettre que les phénomènes anaphylactiques et allergiques soient vraiment de même ordre. A vrai dire, on a cherché entre ces deux états à établir des différences: différences humérales et différences anatomo-cliniques. Disons simple-

ment qu'au point de vue de différence anatomo-clinique, (et ceci dans le test cutané,) dans l'anaphylaxie, le choc local est une réaction rapide, quasi immédiate; l'oedème, la vaso-dilatation provoquent le type réactionnel ortié. Dans l'allergie, le phénomène local diffère selon le tissu sensible. Il se produit une papule souvent nécrotique. Le processus est essentiellement histiocytaire (Sézary).

Ainsi, pour beaucoup d'auteurs, l'anaphylaxie est un phénomène humoral provoqué par un brusque conflit antigène-anticorps, tandis que l'allergie est essentiellement un phénomène tissulaire traduisant la sensibilisation acquise des cellules.

Bactériophages: (30)

Comme beaucoup d'autres catégories d'êtres vivants, les bactéries ont leurs maladies infectieuses. Ces maladies, celles du moins que nous savons actuellement reconnaître, se manifestent par un symptôme majeur, commun à toutes: leur dissolution ou "lyse". Les agents de ces infections sont les ultra-virus, les bactériophages.

La manifestation la plus spectaculaire de la bactériophagie consiste en la lyse des bactéries.

Les bactériophages semblent avoir une application thérapeutique dans les septicémies à staphylocoques. Dans les septicémies à streptocoque, il n'agirait que sur les variétés hémolytiques de ce germe. Il serait remarquable dans les méningites à staphylocoques, il guérirait sans difficulté de nombreuses infections en foyer: furoncles, anthrax, ostéomyélites et quantités d'autres maladies humaines ou animales.

Mais le pouvoir thérapeutique du bactériophage est loin d'être reconnu par tous les auteurs. Quoi qu'il en soit, d'après Krueger et Scribner, l'action lytique du bactériophage sur les bactéries, dans l'organisme, est extrêmement peu vraisemblable. Les lysats bactériophagiques peuvent toutefois exercer certains effets favorables:

1—ils provoquent, chez les bactéries touchées par le bactériophage, des dis-

sociations en variantes généralement moins virulentes que le germe pathogène envahisseur à partir duquel elles se sont formées;

2 — ils augmentent considérablement l'activité des phagocytes chez les individus inoculés,

3—par les fractions antigéniques provenant des bactéries lysées, les lysats entraînent, chez l'hôte, la formation d'anticorps antibactériens spécifiques. Ils agissent donc comme des vaccins bactériens avec, sur ces derniers, l'avantage théorique de fournir à l'organisme des antigènes déjà solubilisés, lui épargnant ainsi un travail de digestion et permettant à l'immunisation de gagner du temps;

4—l'injection des protéines non spécifiques contenues dans les lysats provoque un choc protéinique qui déclenche, d'une part, un mécanisme d'immunité non spécifique, et, d'autre part, stimule la formation des anticorps spécifiques.

Quelle que soit la similitude de ses effets avec ceux des vaccins, des substances de choc et des antiviruses, le bactériophage ne fait preuve d'aucune supériorité évidente sur ces médications classiques.

Mais, malgré ces réactions de l'organisme, il se peut que la résistance de l'individu ou de l'hôte soit amoindrie ou s'il existe des facteurs prédisposants, l'infection va prendre place. Les facteurs prédisposants sont: l'embolie, l'affinité de certaines bactéries pour des tissus spéciaux, des défauts congénitaux, des lésions antérieures, des zones d'inflammation, et des ruptures de vaisseaux sanguins et lymphatiques.

En résumé, il doit donc y avoir un groupe de bactéries assez fort pour briser la résistance de l'hôte à un endroit secondaire, ou bien, la zone doit être dans une condition affaiblie pour qu'un groupe bactérien plus faible tienne prise. Toute maladie, qui tend à abaisser ou à affaiblir l'action bactéricide du système sanguin ou lymphatique, tend à permettre l'expansion de foyers d'infection.

Pour le moment, dû au travail de Rose now, Price, et d'autres, la théorie de l'affinité sélective des organismes est ac-

ceptée. Ils ont trouvé que des organismes pris chez des patients malades et injectés à des animaux expérimentaux produisaient des effets semblables à ceux vus chez l'hôte original.

Weston Price ⁽³¹⁾ pense que, comme les bactéries croissent dans la bouche, elles prennent une qualité invasive leur donnant la tendance à quitter la bouche pour gagner d'autres endroits. Bien qu'il n'y ait pas beaucoup de travail de fait avec les organismes provenant des poches péri-dentaires, un groupe de chercheurs a déjà montré que l'injection de matériel pris dans les poches péri-dentaires infectées a produit une dégénérescence graisseuse du foie et du rein chez des animaux expérimentaux.

Cecil ⁽³²⁾ mentionne la prédominance des abcès pulmonaires, et des bronchiectasies chez les patients souffrant d'une mauvaise hygiène buccale, et il établit que ces lésions sont causées en partie par des fuso-spirochètes qui, habituellement, sont présents dans la bouche, mais spécialement prédominants dans les maladies péri-dentaires.

Appleton ⁽³³⁾ a montré que, lorsqu'il y avait extraction de dents malades, curetage, massage de gencives et mastication de bonbons durs, quand il y avait des dents infectées dans la bouche, il en résultait une introduction de bactéries dans la circulation sanguine périphérique.

Sand ⁽³⁴⁾ a établi que l'état de santé générale peut s'en ressentir, quand les dents malades sont extraites, et, il a observé une aggravation des symptômes lors des curetages successifs profonds des poches péri-dentaires. Alors, quand un nombre d'extractions doit être fait chez un patient avec un trouble péri-dentaire étendu et que l'on soupçonne que l'individu souffre aussi d'un foyer secondaire d'infection, il serait bon d'extraire une ou deux dents à la fois et de laisser espacer les visites de deux à trois semaines. Cette méthode servirait à trois fins:

- 1—Elle donnerait au patient un choc bactérien moindre;
- 2—Le patient serait vacciné par chaque phase chirurgicale;
- 3—Ceci donnerait à l'opérateur la

chance d'observer les effets de la chirurgie sur les maux secondaires.

L'expérience clinique a montré que, dans plusieurs cas, l'ablation du foyer primaire a enrayé la condition secondaire. Il faut bien se rappeler, cependant, qu'un foyer secondaire peut continuer à se développer après que le foyer primaire a été éliminé.

Miller ⁽³⁵⁾ dit que, "dans une étude des causes de 2500 mortalités, 10% ou 250 mortalités étaient d'origine dentaire. De tels chiffres devraient stimuler les recherches pour les foyers buccaux d'infection.

Discussion:

Une bonne partie de la confusion et des troubles au sujet des résultats de l'infection focale sont basés sur plusieurs faits: (36)

1—qu'il n'y a pas de preuve définitive du mode d'action d'un foyer d'infection chronique à causer une maladie à distance. Dans quelques exemples, la métastase bactérienne semble se produire, tandis que dans d'autres, l'absorption de produits toxiques semble être importante; dans d'autres, enfin, l'existence d'un état d'allergie est postulé.

2—une deuxième point est que plusieurs, peut-être la plupart, des conditions dans lesquelles l'infection focale a semblé jouer une part sont des maladies dont l'étiologie exacte est encore incertaine ou inconnue, et, comme nous devons l'indiquer, l'infection focale est un facteur parmi plusieurs autres dans le problème particulier;

3—certains ne peuvent encore différencier cause et effet, entre des changements prématurés et des changements du tissu organisé; et l'insuccès de quelques autres vient du fait qu'ils ont injustement jugé comme évident qu'une maladie établie fusse modifiée par le rayonnement d'un foyer, contre l'influence originale du foyer à initier de tels changements;

4—une quatrième source de confusion consiste dans le fait de faire des rapports généraux plutôt que de limiter leurs observations à une maladie ou à un groupe de maladies.

L'infection focale associée à l'arthrite est un problème très important aujourd'hui, non pas du point de vue mortalité, mais au point de vue morbidité: parce que, selon les statistiques, plus de 320,000 personnes se trouvent dans l'impossibilité de se trouver un emploi à cause de l'arthrite. Les causes de cette arthrite sont:

- 1—les influences héréditaires;
 - 2—les facteurs de nutrition, non seulement dans le choix des aliments, mais aussi dans toutes les influences d'absorption et d'utilisation des aliments ingérés;
 - 3—les conditions glandulaires et métaboliques;
 - 4—les états mécaniques incluant les poids, la posture, les blessures, etc. . .
 - 5—les facteurs de personnalité, qui sont très importants non seulement dans la production de symptômes, mais aussi dans leur continuation.
 - 6—les conditions infectieuses où vient en considération l'infection focale chronique.
- Voici l'opinion de Cecil ⁽³⁷⁾, qui, en 1927, était très puissant dans ses exposés sur le rôle de l'infection dans l'arthrite rhumatismale, a récemment changé ses opinions, concluant que cette maladie était rarement rapportée à l'infection focale, et exposait qu'elle venait habituellement insidieusement sans aucune infection antérieure; et, dans la majorité des cas, il n'y avait pas de foyer d'infection visible, et si l'on trouvait de ces foyers, le fait de les enlever n'avait pas d'effet permanent sur le cours de la maladie.

D'un autre côté, Hench ⁽³⁸⁾ a récemment établi ses opinions comme suit: "comme investigateur clinique, je dois conclure que la cause de l'arthrite atrophique (ou rhumatismale) est encore inconnue et que l'évidence pour l'infection, quoique bien touchante, est incomplète. Invoquant les privilèges d'un investigateur clinique, je ne peux pas et n'ai pas besoin maintenant de décider pour ou contre la théorie microbienne. Comme médecin pratiquant, toutefois, je ne peux pas attendre que l'évidence soit complète. Les exigences de la pratique nous force à exprimer une opinion d'une façon ou

d'une autre . . . C'est pourquoi, comme clinicien pratique, je me confie à la théorie microbienne."

Il faut ajouter que des chercheurs pensaient que les cas d'arthrite pouvaient être éclaircis seulement par le rayonnement de foyers d'infection; ce qui explique plusieurs désappointements dans le passé.

Pour les gens qui souffrent d'arthrite, de néphrite, de maladie de coeur et d'autres maladies organiques dans lesquelles l'infection focale ne peut pas être tolérée, il faut leur éliminer tous les foyers d'infection. Même chez les patients ne souffrant pas de maladies organiques, si une dent ne répond pas au traitement de canal ou si elle n'est pas apte à un tel traitement, dans ce cas, il faut l'extraire.

La périodontoclasie n'est pas souvent regardée comme un foyer, soit parce que plusieurs médecins croient que les lésions de gingivite ulcéraire nécrosante ont un drainage à l'extérieur, et qu'il n'y a pas ou presque pas d'absorption générale. Toutefois, quand la lésion est assez avancée pour causer des poches et une destruction visible de l'os, spécialement avec extension derrière la bifurcation d'une molaire ou d'une prémolaire, une telle poche peut être un foyer d'infection autant qu'une crypte amygdalienne infectée. Incidemment, le mécanisme d'absorption osseuse est expliqué ici par Fish comme étant semblable à celui qui se produit dans l'abcès alvéolaire. L'infection bactérienne présente se trouve dans le tissu mou de la poche, et l'absorption de toxines de cette région tue les ostéocytes de l'os avoisinant et augmente le nombre des ostéoclastes.

Christiansen a fait une liste de faits, en plus des zones vulnérables, qui rendent la poche périodentaire un site favorable pour l'absorption de toxines: (39)

1— c'est un site anormal d'implantation bactérien avec évidence définie de réaction sur les tissus mous;

2— par des fissures dans la couche épithéliale de la poche, les bactéries et les toxines peuvent facilement entrer dans les tissus sous-jacents;

3— l'absorption de telles toxines, et

même l'entrée de bactéries dans le courant sanguin, sont rendues faciles par la présence des nombreux capillaires près de la surface;

4- l'irritation mécanique par les calculs conduit à une réponse continue de la part des capillaires dans les tissus mous sous-jacents ou plutôt adjacents;

5- la mobilité de la dent dans son alvéole aide à l'absorption de toxines, la dent agissant comme un piston en aspirant les bactéries des crevasses par des fissures dans la couche épithéliale et de là dans les capillaires.

Il réfère aux travaux de Okell et Elliot et autres dans lesquels la bactériémie d'origine buccale a été démontrée en faisant mâcher de la paraffine pendant 70 secondes par une personne souffrant d'infection périodentaire.

En 1938, Cecil ⁽⁴⁰⁾, a établi l'opinion suivante: "Plusieurs parmi nous qui, d'abord ont accepté la théorie d'infection focale avec enthousiasme, ont guetté avec intérêt et précipitation son développement rapide dans les champs variés de la médecine, mais, maintenant, on se demande si le temps n'est pas venu de révéler toute la théorie. Plusieurs étudiants pensifs contestent sérieusement sa validité; et quelques uns veulent bien la mettre au rancart . . . Les scientifiques deviennent un peu fatigués de l'acceptation universelle de la théorie comme un fait établi."

Dans son volume sur la dentisterie opératoire, Curtis ⁽⁴¹⁾ a fait les commentaires suivants: "Si les foyers d'infection ont une importance dans la production de maladies corporelles, alors, il faudrait chercher et dépister tous les foyers qui se trouvent dans le corps, et, très probablement, il faudrait d'abord enlever ces foyers sans se soucier de l'endroit où ils se trouvent. Si nous ne savons pas si la maladie en question est due à un foyer infectieux, nous devons avertir l'individu porteur d'une telle maladie, qu'il a un foyer infectieux, et que, comme mesure d'hygiène, il faudrait l'enlever, mais ne pas faire croire au patient qu'un tel traitement va le guérir de sa maladie. Peut-être devrions-nous être radicaux dans l'arthrite rhumatismale, mais aussi, de-

vrions-nous être extrêmement conservateurs dans le maniement des foyers infectieux dans l'arthrite dégénérative. Les foyers infectieux devraient être drainés ou enlevés, qu'ils soient associés ou non aux maladies systémiques. Personne ne peut dire que leur rétention peut conduire à l'arthrite, ou que l'ablation de ces foyers va amener la guérison de l'arthrite. Nous ne pourrions répondre à ces questions seulement quand nous saurons plus sur l'étiologie des groupes infectieux de l'arthrite."

Reiman et Havens ⁽⁴²⁾, en 1940, ont établi ceci: "Nous pouvons dire que:

a) la théorie d'infection focale, dans le sens du terme employé ici, n'a pas été prouvée;

b) les agents infectieux en cause sont inconnus;

c) un grand nombre de patients qui ont leurs amygdales ne se portent pas plus mal que ceux qui ont leurs amygdales enlevées;

d) les patients dont on enlève les amygdales ou les dents, souvent, continuent à souffrir de leur maladie originale;

e) des effets salutaires ne peuvent rarement être attribués seulement à des procédures chirurgicales;

f) des effets salutaires qui arrivent à la suite d'interventions chirurgicales sont souvent suivis d'effets nuisibles ou d'aucun effet, et

g) plusieurs foyers d'infection guérissent après que la maladie constitutionnelles a été enrayée ou quand la santé générale s'est améliorée à l'aide de mesures d'hygiène ou de diète."

Conclusion:

Devant de telles diversités d'opinions, devons-nous rester passifs, laisser la question de côté, ou être radicaux, et enlever tout foyer infectieux qui cause ou qui pourrait causer une maladie ou une infection secondaire? Je crois qu'il vaudrait mieux être modéré, et, avant d'extraire la dent, se demander s'il y a des raisons suffisantes pour extraire cette dent qui cause ou qui peut être la cause de l'infection secondaire; et aussi, se demander comment la bouche sera réhabilitée après l'extraction. Le dentiste devrait devenir

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Care of the deciduous teeth as the basis of occlusion of the permanent dentition*

The Grieve Memorial Lecture

by LEUMAN M. WAUGH, D.D.S., D.C.D. (Hon. U. Montreal), F.A.C.D.

Prevention in orthodontics is largely in the hands of the general practitioner. It is he who first sees the child patient and it should be his responsibility to detect early those conditions which predispose to malocclusion of the deciduous teeth which, if left uncorrected, will become aggravated and lead to malocclusion of the permanent teeth. The general practitioner should either correct such conditions without delay or refer them for treatment. This is the only means by which dentistry can hope to provide the increasing need for orthodontic care; the specialist alone cannot do it.

The general practitioner has the best opportunity to educate parents to the realization that deciduous teeth are fully as important as the permanent ones and, in some respects, even more so, and that

an investment in their early care will be of immediate benefit to the child and will pay priceless dividends later. As Philips Brooks said, "He who helps a child helps humanity with an immediateness which no other help given to human creatures, in any other stage of human life can possibly be given again."

The teeth should be examined regularly from the second year on and given prompt attention in a manner that will maintain the full arch length from the second deciduous molar around to the one of the opposite side. This is imperative to the natural development of normal occlusion of the permanent teeth. In all but a very small percentage of cases this serves to provide sufficient jaw area for the permanent cuspids and bicuspid. All fillings in proximal surfaces must fully restore the mesio-distal size of the tooth crown and the antero-posterior length of the arch so that the permanent first molar is guided to erupt in its normal distal position. When deciduous teeth are prematurely

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lost, a space maintainer must be placed to prevent reduction of the space by the mesial shifting of the tooth back of the one lost. The maintenance of the full length of the deciduous arch to about the twelfth year is the most important precaution against crowding of the permanent buccal teeth because the permanent first molar, the keystone of the arch, erupting distal to the second deciduous molar, grows into its normal position in the jaw and cranium. This is the most important factor in preventing the need for extraction of good permanent teeth as a therapeutic measure in orthodontics. The upper permanent first molar is more important than the lower. Pressure habits that tend to deform the growing jaw must be observed and expeditiously overcome.

And, above all, dental caries must be detected early and given prompt treatment. The parent must be told that candy and all sweets made from refined sugars are the great cause of tooth decay and that the child must be taught the resultant harm to the teeth. Substitute dried fruits (figs, raisins, dates, and prunes), also nuts, and fresh fruits, such as bananas, apples, peaches, oranges, pears, grapes, etc. These contain enough sugar to supply body needs and are not active in tooth decay. If the candy habit cannot be broken, then sugar in limited amount should be methodically eaten after meals and the teeth cleaned within ten minutes with a brush, efficient dentifrice, and a thorough mouth bath, churning water about the mouth and especially between the teeth. Water is usually available even though a brush may not be. Be sure to bathe the mouth thoroughly even if the water has to be scooped up in the hands from a brook as when on picnics or camping. Tooth decay has been proven to take place within ten minutes after eating refined sugars, as candy, syrups, molasses, over-sweetened drinks, and sweet dessert, and recurs repeatedly no matter how often the sweet is eaten. We believe it is safe to say that dental caries, either neglected or improperly cared for by the dentist, is the greatest of all causes of

malocclusion of the permanent dentition. It is worthy of note in this connection that the primitive Eskimo, having no sugar and therefore no tooth decay, also has the highest percentage of normal occlusion of any known race. Chewing gum and candy, sweetened without sugar, are being put on the market. These will not cause tooth decay. They are equally wholesome and are strongly recommended.

Malocclusion of the deciduous teeth does occur but in much smaller proportion than it exists today in the permanent dentition. When present, the patient should usually be sent to the specialist for consultation. The dentist, after a conference can decide whether he wants to care for the condition himself or have the orthodontist take over and make correction while in its incipient stage. This cooperation often prevents an aggravated and complicated condition from developing, thus applying the old and much quoted truism, "A stitch in time saves nine."

It is surprising how the cost can be kept to a minimum by judicious early treatment. For families of low income, the orthodontist can, if necessary, suggest a compromise treatment at a low cost that will provide efficient mastication and good facial appearance—just as the best dentistry cannot be afforded by people of all social levels and less costly and compromise dentistry must be resorted to. "Aim for the ideal, but studiously compromise for the practical," is the principal that here applies. In like manner, the orthodontist can do much and the earlier he sees the child the more he can accomplish at the fee the patient can afford.

From ten years' experience on the organization and the Advisory Committees on Orthodontic Care of the Departments of Health of the State of New York and of the City of New York, I feel safe in stating that orthodontists must give greater thought to providing care for those in the low income brackets as does the general practitioner in dentistry. The pioneers in orthodontics, including the one

whose memory we are honoring today, were inspired by their leader, Edward H. Angle, to reach for the stars, to develop and provide the very highest type of service, the most nearly ideal occlusion that it is possible to attain, and rightly so. We believe that "A man's reach should ever exceed his grasp" and we give all credit to our leaders. No group in dentistry has ever labored with greater energy and devotion than they. It then was a new specialty that had to prove its worth. This was over a half a century ago when many dentists repudiated the benefits of straightening teeth. At first it appealed to our patients mostly as a cosmetic procedure and parents had their children's teeth "regulated" as a beauty measure. Untold hours have been spent by orthodontists in explaining that it is done primarily as a health measure; that teeth in normal occlusion are more efficient in mastication, are more easily cleansed, last longer, look better when placed in normal relationships; and that standards of health and standards of beauty go hand-in-hand. Fifty years ago it appealed mostly to the wealthy. With passing years and broader appreciation, its benefits have become so impressive and apparent that it is now sought by the masses.

The length of time needed in complicated cases treated for near-ideal results, with its consequent high cost, made and still makes it impossible for very many worthy children to have such health care. If orthodontics is as beneficent a health service as we orthodontists tell ourselves it is, we must zealously endeavor to help provide such care for future generations of all classes. The two essential factors are (1) early care, and (2) compromise treatment that will provide efficient occlusion and a pleasing facial contour within the family budget. The satisfactory experience in the Departments of Health of the State and of the City of New York will, we hope and believe, attract the interest of similar groups to provide means for the care of indigent children who have a crippling and handicapping condition.

Brief reference to the experience of the Departments of Health of the State and of the City of New York, during the past nine years, will perhaps be of interest. In 1945, a committee of five members of the Northeastern Society of Orthodontists (then the New York Society of Orthodontists) was nominated by the Society and appointed by the Commissioner of Health of the State of New York to serve as the Advisory Committee on Orthodontics to the Department of Health. Soon after, the Commissioner of Health of the City of New York appointed the same committee.

It was our duty to set up standards for the launching of the program. These throughout the years, have proved so sound in practice that a report just received from David B. Ast, Director of the Bureau of Dental Health of the State of New York attests its success. The number of cases currently under treatment are: (1) upstate New York, about 800, with an annual cost of approximately \$190,000, and (2) City of New York, about 1,000 cases, with an annual cost of approximately \$220,000, with the number of cases increasing annually. It is stressed here that the treatments, whenever possible, are carried out in the private offices of the orthodontists comprising an approved panel.*

Quoting from the American Journal of Public Health, Vol. 43, No. 9, p. 1156, the editor commented as follows:

"This is the story of 1500 children with severe orthodontic handicaps who come from families unable to pay the high costs of remedial care. This state-wide rehabilitation program offers them hope for a normal, productive life. Something new!"

It seems a sounder practice to invest in the health of a child, both physically and mentally, than to have it grow up with a handicap that may result in its becoming a public charge in later life and bad occlusion, hideous faces, and indistinct speech from mal-formed mouths and cleft lips and palates can do just that. It is

*Full details may be obtained by writing to the Bureau of Dental Health, David B. Ast, D.D.S., Director, 39 Columbia Street, Albany 7, New York.

all right to "hitch your wagon to a star" but in doing so let us not forget and thereby neglect the large percentage of our children who have not been endowed by Nature to ever become a "star."

Parents of prospective patients have told me that their dentist has advised waiting for treatment until after the deciduous teeth have been fully replaced by permanent successors—their thesis being *Why Straighten Teeth That Will Be Lost?* We have even heard of dentists advising against the practice of filling deciduous teeth because they will soon be replaced. Such advice must be regarded as the most harmful that can possibly be given the parent. Normal occlusion has long been accepted as the basis of the practice of dentistry and cooperation in dentistry for children must be increasingly apparent. Without the aid of the general practitioner in the field of prevention, orthodontics will be greatly hindered in its aim to eventually make possible treatment for all who seriously desire it.

With few exceptions, we, the dental graduates of yesterday, were given little or no instruction in our undergraduate courses in orthodontics. No dental school has ever claimed to prepare its students upon graduation for specialization in any field; just as in medicine and surgery, the undergraduate can be given only sufficient basic training to fit him to begin general practice. Preparation for specialization must be obtained after graduation. In dentistry until recently orthodontics has been neglected in the undergraduate curriculum. The chiefs of clinical departments were unwilling to give time from their schedules, and instruction, even in prevention in orthodontics, was pushed aside except in about a half dozen of our approximately forty dental schools. However, within the past five years, the Council on Dental Education of the American Dental Association has become active in the development of a course for the undergraduate in Prevention and soon we hope that the graduates of tomorrow will have a practical comprehension of prevention

in orthodontics based on growth and development which will initiate a new era in dental health for the children of tomorrow.

It is encouraging that there now are some thirty accredited university dental schools offering training in orthodontics for graduates in dentistry in preparation for specialization. In 1922 there was only one. Now a minimal course of sixteen months of continuous studentship—the equivalent of two academic years—is required for accreditation by the Council on Dental Education. For the general practitioners of today, the universities should offer short, intensive courses in prevention in orthodontics of which full advantage should be taken.

One of our foremost magazines in general education, "Correct English," has on its cover the maxim: "The World Needs More to be Reminded than Informed." Therefore, I shall offer no apology for referring to knowledge that is not essentially new. It will be my endeavor, however, to re-evaluate it so that we may apply this basic knowledge of growth and development of the head, face, jaws, and teeth as a guide, especially when working for growing children.

We recognize rather generally that normal occlusion is the basis of the practice of dentistry and that the development of normal occlusion is the basis of the practice of orthodontics. The growth of the face, jaws, and teeth toward adult occlusion is an individual, progressive problem from conception to maturity. People of recent time, especially those of mixed racial ancestry, together with the many intangible influences of environment, often make orthodontic diagnosis most difficult. The early recognition of factors that predispose to malocclusion and their prompt correction we regard as essential to the maximum development of facial bones and related musculature, the jaws, teeth, and individual functional occlusion.

Normal function is conducive to normal structure and, conversely, abnormal or

perverted function is conducive to abnormal growth and abnormal jaw structure, tending toward malformation of face and jaws, with mal-positions of erupting teeth. Principles of growth, in our experience, teach us that the earlier any per-versions in growth and development are corrected the better the prospect of preventing the need of complicated corrective orthodontic treatment later.

In all sciences there must be a "norm" to be used as a standard. The only truly exact science is mathematics,—two and two always make four. Chemistry is fairly exact. In the biologic studies, however, a "norm" or yardstick from which to reckon is equally important but not so easily found. Much effort by researchers has served to gradually shed light. In orthodontics we are fortunate to have gleaned much from collateral sciences.

An outstanding contribution was made by T. Wingate Todd, Professor of Anatomy at Western Reserve University. He found much that can be utilized in a practical way by the orthodontist. In a paper presented at a meeting of the American Society of Orthodontists in 1935, he stated:

"The records of our long term studies on children now include standard Bolton X-ray pictures and records over a period of five years. It is perfectly possible therefore to construct norms of facial growth at any period of childhood, and it is likewise possible to study both the origin and the course of deviations from the norm."

Todd also says in the same paper:
 "... I am altogether indebted to my colleague, Dr. B. Holly Broadbent, whose patient devotion to the scientific side of orthodontia was rewarded by the establishment of the Bolton study and whose technical skill and meticulous precision made possible the roentgenographic cephalometer, by which determinations of form and growth in the face can be made with accuracy and confidence."

For teaching purposes we prepared a diagram in 1936 in an effort to illustrate the physiology of head development and growth from conception to maturity based on Todd's findings concerning horizontal growth. It is so arranged that it may be helpful to the orthodontist in timing treatment.

The diagram was designed to portray

*Illustration of Dental Development from Conception to Maturity for Guidance in Orthodontic Practice
 Compiled by Leumen M. Waugh, D.D.S., D.C.D. (Hon. Montreal)*

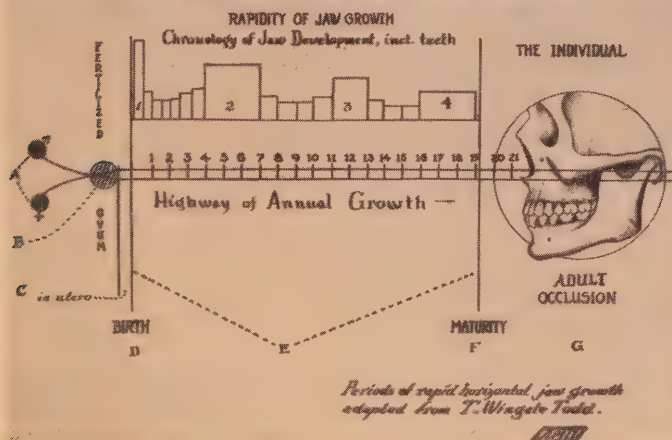


FIG. 1. Detailed description in text immediately following.

growth in all three dimensions: (a) horizontal—breadth, (b) horizontal—depth, and (c) vertical or dental height.

The periods of accelerated horizontal jaw growth were determined by Todd as follows and are depicted by boxed areas marked 1, 2, 3, and 4:

1. From the 21st day after birth to the 7th month. He states that this is the most rapid period of any time in life. The lower central incisor, baby's first tooth, appears through the gum at about the 7th month.

2. From the 4th to the 7th year—the second most rapid period.

3. From the 11th to the 13th year—the third most rapid period.

4. From the 16th to the 19th year—the fourth most rapid period.

In the intervening periods, growth takes place mostly in a vertical direction.

In the illustration, the upper row, consisting of boxed areas, designates growth: (a) rapidly by the box height, and (b) breadth—depicting the duration of growth spurt. The lower two long horizontal lines portray the growth highway from conception to maturity and the short vertical lines denote years from one to 21. The letters denote the following:

- A. Male and female pronuclei
- B. Fertilized ovum—conception
- C. Gestation—nine months in utero
- D. Birth
- E. Highway of growth numbered by years
- F. Maturity
- G. Individual adult occlusion.

Detailed explanation of the foregoing divisions:

A. The male and female pronuclei, by their union, coalesce the genes that determine heredity.

B. Conception, at which time heredity is sealed. Thereafter, the inheritance handed on from ancestors cannot be changed.

C. The gestation period includes A and B and, from this beginning, the human infant is developed in nine months in preparation for birth.

The important dental events taking place in utero during gestation are:

1. Formation of Mickel's cartilage, site of the formative jaws at about the 6th week. The mandible ossifies earlier than any bone in the body.

2. Union of maxillary and pre-maxillary bones in the line of future upper lateral incisors at the 40th to the 45th day. Failure to unite will result in clefts of the upper lip and palate, either hard or soft, independent or in combinations, unilateral or bilateral.

3. Initial calcification of deciduous incisor edges at the 5th month, cuspids at the 6th month, molar occlusal surfaces at the 6th month, and permanent first molars at the 7th month in utero. The full breadth of the deciduous crowns is formed within the first few weeks after the tooth buds appear, there being three calcification centers for each incisor and four centers for each molar.

4. At birth the tiny jaws contain 24 tooth follicles, 20 for deciduous teeth and four for the permanent first molars.

5. The breadth and length of forming teeth must be considered separately when studying the growth of jaws and the eruption of the teeth in the development of occlusion.

The breadth of the incisal edges and occlusal surfaces of the teeth attain their full size soon after the tooth buds first form; the deciduous in a very few weeks and the permanent in a very few months. All crowns are fully formed before eruption.

The length or vertical height of each tooth takes several years after eruption for completion of the root ends.

The urge stimulating most rapid growth from the 21st day to the 7th month is due to the fact that the deciduous crowns had all attained their full breadth before birth; therefore, the need for rapid horizontal jaw growth as their follicles move into alignment in the jaws during the first year.

Normal nursing or suckling is most important during the first seven months.

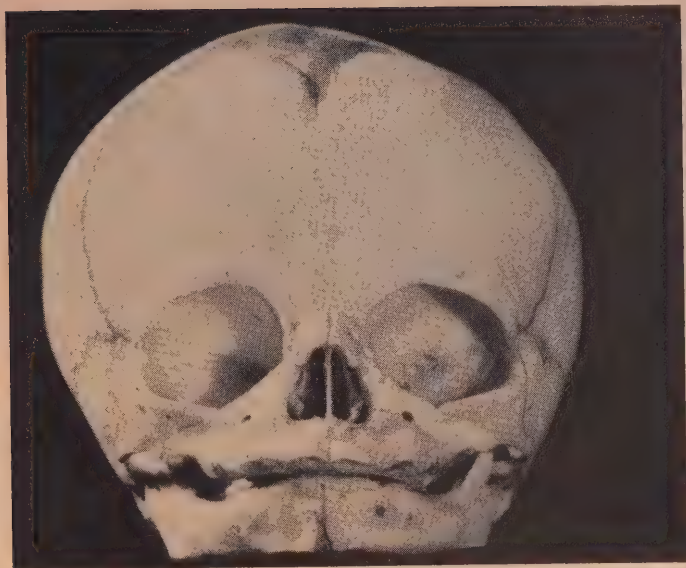


FIG. 2. *Human skull at birth. The tiny jaws contain 24 tooth follicles, 20 of which are for the deciduous teeth, and 4 for the permanent first molars. The crowns of the deciduous teeth have attained their full width and are positioning for eruption. This explains the need for most rapid horizontal growth from the 21st day after birth to the 7th month at which time the lower central incisors erupt.

The strenuous exercise necessitated by suckling is a very important factor in jaw growth and is the cardinal factor in the forward development of the mandible so that by weaning time the lower and upper incisors are in normal labio-lingual relations. At birth, the mandible rests in a distal position. It must be carried forward in normal suckling which action stimulates development in the ramus, condyle, and temporo-mandibular joint so that the upper and lower incisors will occlude normally.

If the infant is fed artificially, the artificial nipple must be short, closely resembling the maternal nipple, to compel the mandible to move forward in suckling. This function, properly performed during

the first year prior to weaning, is, we believe, the most important factor in developing the mandible forward, thereby preventing a Class II (Angle) or distal resting position of the mandible. In the examination and recording of the dentitions of about 300 primitive Eskimos in Labrador and 3,500 in Alaska from 1921 to 1937, we found less than 2% of Class II malocclusions. (In our practice, we find about 40%.) This low percentage in the Eskimo we attribute primarily to compelled natural nursing and to the chewing of tough foods after weaning.

Vertical growth of the deciduous teeth will gradually take place as the roots lengthen, the incisor root ends being completed at 1½ years and the cuspids and molars at about the 4th year. The alveolar process forms as the roots lengthen. Therefore, the jaw growth from the 2nd

*All illustrations are original. Those of skulls were made from a series of fifteen collected by the author. They range from birth to the fifteenth year and one of adulthood.



FIG. 3. Comparison of skull at birth (left) and at maturity (right)—photographed on same negative. The face areas are important. At birth, the face forms one-ninth the size of the head. At maturity, it has grown to form one-third. This rapid acceleration in the growth of the face is primarily necessary for the accommodation of the teeth.



FIG. 4. Skull at birth—lateral view—showing the resting position of the mandible at this age. In natural nursing, it must be carried forward so that the lower gum pads contact directly below the uppers so that the milk may be suckled into the mouth. This, we believe, is a most important factor in the prevention of retracted mandible or Class II (Angle) malocclusion.

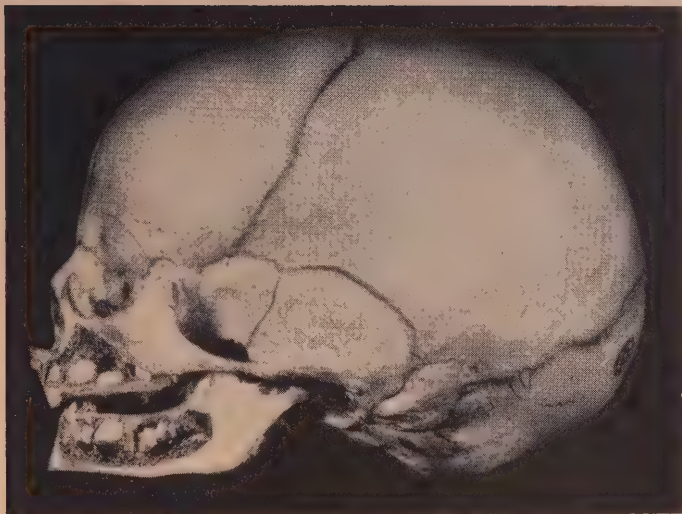


FIG. 5. Skull of infant about 8 months after birth. The incisors are seen to be erupting. Note the forward development of the mandible to facilitate masticating function of incisors by weaning time.

to the 4th years is largely in the vertical direction. In the 2nd year the buds for the bicusps appear and in the 3rd year those for the permanent second molars.

The deciduous dentition is completed—root ends included—by the 4th year. The jaws, except in a small percentage, should attain their adult trans-arch width in the deciduous molar regions about this time. The deciduous molars and cuspids combined occupy sufficient horizontal area to accommodate the bicusps and permanent cuspids which replace them.

The permanent first molar crown attains its full breadth at about the 8th month after birth. It gradually grows into position distal to the second deciduous molar and erupts at about the 6th to the 7th year although its root ends do not become completed until about the 10th year.

There has long been a difference of opinion as to whether appliance therapy should be active during periods of accelerated growth or between them. While we

advocate synchronizing treatment with growth, this needs explanation.

It has been our practice to observe carefully the development of the jaws, nasal cavity, and entire face, comparing this with the average norm for the age of the patient. If Nature is making satisfactory progress unaided by appliance therapy, the observation is continued by regular occasional visits to the office. However, if Nature manifestly lags, then appliances are used to nudge Nature—as it were. This may frequently be toward the end of a “norm” period and the treatment will naturally extend beyond the average “norm” range of horizontal growth. This we regard as working with Nature because growth in this patient is slower than average and needs stimulation with appliances until the normal has been attained. We then remove appliances and continue to note Nature's effort. In some cases no further treatment is needed. In a majority, however, a final trueing up is called for, beginning about the 12th



FIG. 6. Excellent occlusion of deciduous dentition at about the third year—made from original casts.

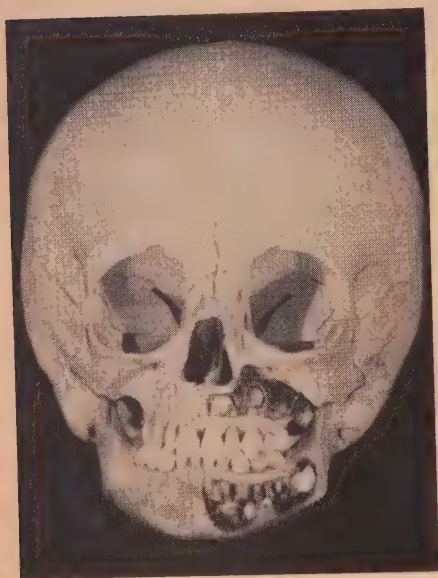


FIG. 7. Skull at fourth year, showing deciduous root ends about completed. Note proximal contact of incisors and molars; also size and position of permanent first molar. Forty-four teeth and follicles are present at this age.

year. This is usually much less complicated because of the primary preventive treatment.

We must not lose sight of the fact that the dentally normal child is not the one whom we treat—lucky youngster! He develops a good occlusion without the aid of the orthodontist; he has little or no tooth decay or has had good dentistry. It is those who grow outside the physiologic range that need our help. Good judgment here is developed only by the clinician as the result of experience which is based on the wise application of principles of growth and development. We must be constantly mindful of the guiding fact that individual growth patterns in children vary widely within the normal or physiologic range. Relative to the jaws and teeth, this may vary over many months and even as much as two years, occasionally longer, and yet be within the normal for that child.

Todd found the second most rapid period of horizontal growth to be from the 4th to the 7th year. This is due largely to the growth and aligning of the permanent incisors and cuspid crowns within their crypts in the jaws. These are staggered

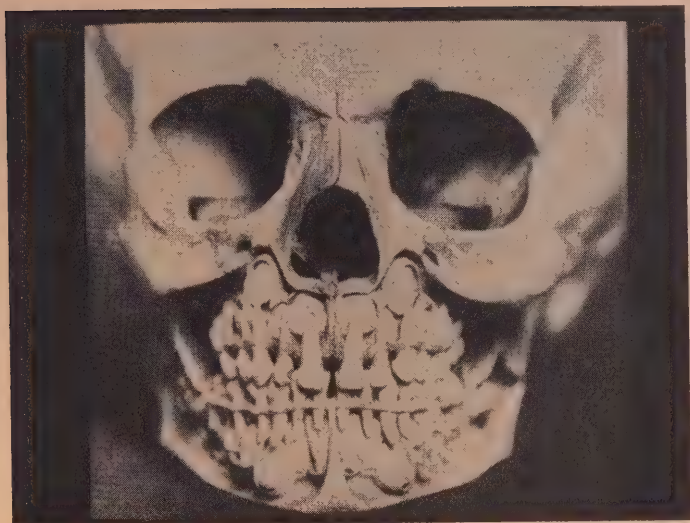


FIG. 8. Skull at about fifth year, showing developmental spacing of the deciduous incisors. Note the broader crowns and positions of their permanent successors. The jaws at the 6th to the 7th years contain 48 teeth and developing follicles, this being the largest number of any time in life. The face has grown so much faster than the rest of the head that it is now one-fifth of the head size.

at first, the laterals lying somewhat to the lingual of the centrals with the cuspids to the labial of the laterals. They now begin to move toward their eruptive positions. These crowns are all considerably wider than their deciduous predecessors; therefore, horizontal growth of the jaws must take place to accommodate them. Frequently developmental spaces are formed between the deciduous incisors and cuspid crowns.

The permanent first molars are also growing toward eruption which takes place from the 6th to the 7th year. Parents should be impressed that it is a Permanent tooth, the first to erupt and the most important of all teeth and must, therefore, be carefully watched and given the best dental care. Its loss greatly complicates orthodontic treatment and makes it next to impossible to develop a normal occlusion.

It is an interesting fact that at about the

6th year the jaws contain more teeth and follicles than at any time in life, there being a total of 48,—20 of which are deciduous teeth in function and 28 are growing follicles of permanent teeth. The number will decrease as the deciduous teeth are replaced by their successors. The lower central incisor is the first to be shed. The permanent central erupts at 7 to 8 years, the laterals at 8 to 9 years, and the first bicuspid at 9 to 10 years. The root ends of the centrals are completed at 11 years and the laterals at 12 years. The tooth buds of the permanent third molars begin to form about the 8th year.

The third most rapid period of horizontal growth is from the 11th to the 13th year. This growth takes place largely to the distal of the permanent first molar to provide bony support for the permanent second molar. The cuspid erupts about the 11th year and its root end is completed

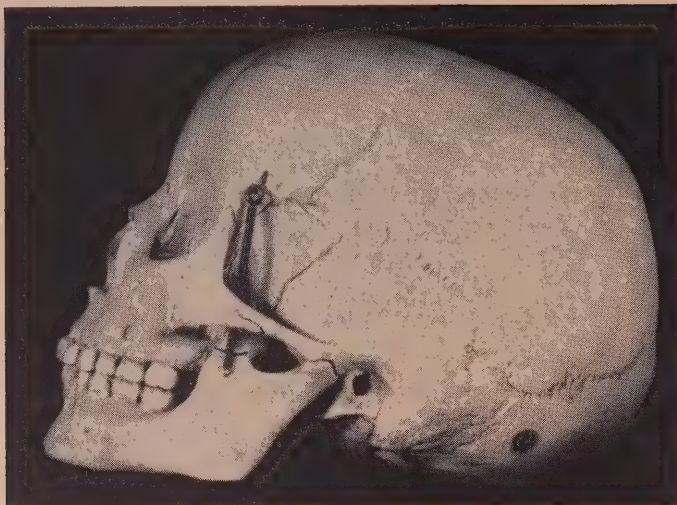


FIG. 9. Skull, lateral view, at 7th to 8th year. Note proximal contact with deciduous second molar. The permanent first molar is guided to its normal distal position in the cranium when the mesio-distal length of the deciduous arch is maintained either by natural means, as absence of proximal caries, or by proper dental care. This is the first of the permanent teeth to erupt and is the largest and the most important in the development of a normal occlusion.

by the 16th year. The second molar erupts about the 12th year and its root end is completed at the 16th year. There is much important growth during this pre-pubertal spurt, especially in the condylar region, much of which is concerned with vertical adjustment.

The fourth and last period of accelerated horizontal growth is from the 16th to the 19th year and is distal to the second molar, principally to provide jaw area for the third molar. The eruptive period varies widely from the 16th to the 22nd year. The root ends are completed about the 23rd year.

Proper appraisal of the tempo of growth in the individual child is the orthodontist's greatest problem and proper experience is the essential guiding factor. This is important in the TIMING of treatment. With all credit to the researcher, his findings are helpful and of use but only insofar as they can be APPLIED in

the care of our patients. It is upon the *clinician* that we must rely for that judgment and best guidance, the general practitioner and pedodontist in prevention, and the orthodontist in consultation and treatment.

SUMMARY

The most important preventive procedure in orthodontics is the maintenance of the full deciduous arch length from the distal surface of the second molar around to that of the opposite side until the teeth are replaced by their successors. The permanent first molar is thus guided in eruption to its normal position contacting the distal surface of the second deciduous molar and should be so retained until all of the deciduous teeth are replaced about the 12th year. It is the most important of all teeth and must be kept in perpetual health and efficiency. This we recognize as the IMPERATIVE FACTOR in the de-

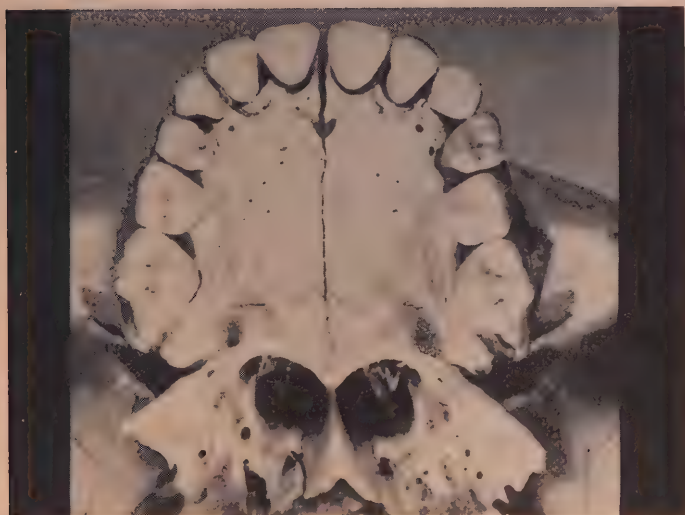


FIG. 10. Occlusal view of the upper arch at about the ninth year. The full arch length has been maintained, thus guiding the permanent first molars to fully erupt in their normal positions in the dental arch and cranium. This first permanent molar relation is the greatest of safeguards against the need for extraction of good teeth as a therapeutic measure in orthodontics.

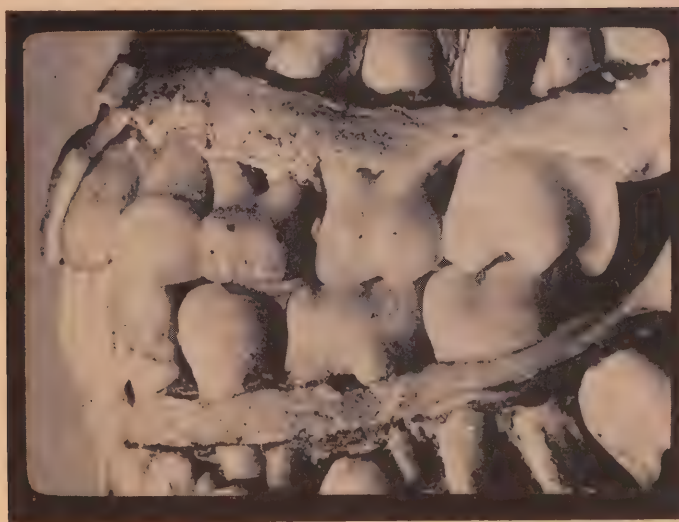


FIG. 11. Lateral view of same dental arch shown in Fig. 10. Note the integration of the upper and lower permanent first molars. This portrays a truly normal occlusion for this age and is the ideal sought in orthodontics.

velopment of normal occlusion of the permanent teeth.

If the full length of the deciduous arch is not maintained, the permanent first molars almost invariably shift to the mesial resulting in too little jaw area with crowding and mal-alignment of the bicuspid and cuspid as they erupt and orthodontic treatment thus becomes a necessity. In normal cases the deciduous molars and cuspids provide sufficient antero-posterior jaw length to accommodate their permanent successors. Therefore, horizontal growth in this region is not necessary after the 4th year.

In extreme cases of mesial shift of the permanent first molar, extraction of good teeth may become necessary for the attainment of a pleasing result. However, it must be regarded as a compromise. Early treatment is the best safeguard against the need for such procedure. It should be synchronized with the normal growth of each individual child. In the buccal segments, for the correct alignment of bicuspid and cuspids, the jaw area should be large enough to receive these teeth in advance of their eruption and the correct distal position of the permanent first molar assuredly provides for this. Mesial shift should be corrected as soon as detected by moving this molar to its normal distal position. Extra-oral pressure, with head cap or cervical anchorage, is often indicated.

In the incisal segment, horizontal jaw growth continues after eruption. While the permanent incisors are considerably wider than their deciduous predecessors, there is some latitude in that growth of jaws forward and downward in this section continues during and after eruption.

Should developmental spacing of deciduous incisors be insufficient to provide adequate area for their eruption in alignment, the tongue and lips in function tend to guide them into alignment as growth of the jaw takes place during the two or three years following eruption, provided there is no mechanical interference as when teeth are in-locked or in crossbite

or supernumerary teeth are present. These conditions should be corrected without delay and should take only a short time. The appliances should then be removed and Nature given her opportunity. Quite frequently it will be necessary to align them finally during a secondary period of treatment. Protruding upper incisors should be corrected promptly to protect them against the danger of breakage.

Deep overbite, when the lower incisors wound the mucuous membrane of the palate, should be promptly corrected. Abnormal labial frenum should receive early treatment by appliance pressure from their distal surfaces, the frenum being thus compressed with resultant resorption due to diminished blood supply and impoverished nourishment.

Open bite, almost invariably, is due to harmful pressure habits of biting or sucking the tongue, lips, finger, or thumb. This should be corrected as early as is expedient. Relapse of well-aligned teeth will recur unless the causative habit is permanently broken.

And certainly the most harmful advice that can possibly be given the parent is that of deferring orthodontic care until all of the deciduous teeth have been replaced by their permanent successors at about the 12th year.

CONCLUSIONS

I. Dental caries of the deciduous teeth, when neglected or when not given proper dental care, is the principal cause of mal-occlusion of the permanent dentition.

II. Dental restorations of the deciduous teeth must replace the full mesiodistal dimension of the natural tooth and space maintainers must hold the full space of any prematurely lost tooth and should be so constructed that they will not retard or deflect the eruption of the permanent successor.

III. Malocclusion of the deciduous teeth should be recognized early and be promptly corrected while in its incipency by the

combined care of the general practitioner and the specialist.

IV. Early treatment should be synchronized with the growth pattern of the individual child.

V. After the early removal of interferences with normal growth of jaws, teeth, and face, Nature should as a principle be stimulated without appliances to the maximum of the patient's inheritance before final mechanical therapy is resorted to. It is when Nature manifestly lags that orthodontic appliances should be used.

The best result is paramount and the simpler the appliance and the shorter the period worn the better. The young patient who, after all, is the true excuse for orthodontics is thus best served and made happy as is aptly expressed by Mina B. Atkinson in a current magazine:

*"If she suddenly laughs for no reason at all,
If her smile is more toothy, more frequent and gay,
It's just that those braces she wore all those years
Were removed (Hallelujah!) forever today."*

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The temporo-mandibular joint

Its Component Parts, Its Derangements and their Treatment.

Part II

by ALBERT A. ANTONI, D.D.S., Toronto

(Concluded from January Issue)

VI. SUGGESTED PROCEDURE FOR RECORDING CASES OF TEMPORO-MANDIBULAR JOINT DERANGEMENT

1. CHIEF COMPLAINT

2. HISTORY OF PRESENT ILLNESS.

- A. Date of onset.
- B. Any association with trauma, prolonged opening, dental operations, tonsillectomy, yawning, etc.
- C. Cracking, tenderness, locking, crepitation, increased or reduced mobility, tension or pressure feeling and pain. If pain is involved, the type and areas affected, and whether function or disuse alleviates or aggravates it are points worthy of note.
- D. The amount of real inconvenience or discomfort to the patient because of the condition.
- E. An accurate account of exodontic history and mastication habits (unilateral or bilateral).

3. GENERAL HEALTH—the following points should be recorded:

- A. Mastoid or sinus disease.
- B. Other systemic diseases, e.g. syphilis, diabetes, endocrine dysfunction, etc.
- C. Other painful joints.
- D. Impaired hearing—tinnitus, vertigo, etc.
- E. Dizziness, headaches.
- F. Glossodynia.

4. CLINICAL EXAMINATION—Establish the status of dentition and masticatory apparatus by recording.

- A. Loss of teeth with no replacement, with resultant drifting, tipping, and extrusion, etc.
- B. Ill-fitting dentures, partial dentures, bridges and other restorations.

C. Inherent malocclusion

- (a) Rest position and excessive free way space.

- (b) Cusp interference.

D. Mal-eruption of maxillary third molar teeth.

E. Description of bite.

F. Mandibular movements.

G. Subluxation.

H. Joint noises and point in excursion at which they are audible.

I. Trismus.

J. Ankylosis.

5. X-RAY EXAMINATION—It is necessary to study and record the following features:

A. Size and shape of condyle heads.

B. Position of condyles in glenoid fossa in both open and closed positions.

C. Obliteration of Joint space.

D. Extent of movement with relation to the articularis eminentia.

E. Symmetry of joints.

F. Hypertrophic changes.

G. Other findings.

6. DIAGNOSIS—An attempt is here made to record whether the particular case is a traumatic, infectious (non-specific or specific), a rheumatoid arthritis, or a degenerative condition. Dislocation, subluxation, fracture, ankylosis or congenital deformity of the joint can well be the diagnosis. Neoplastic, atrophic and hypertrophic conditions are sometimes seen and may be noted under diagnosis.

7. TREATMENT—Our present concept of treatment can be divided into four phases as follows:

A. Conservative therapy—

(i) Rest

(ii) Application of dry heat and diathermy

(iii) Sedation

(iv) Restriction of motion

- B. Hydrocortisone (intra-articular injection).
- C. Correction of occlusal discrepancies.
- D. Surgery.

8. RESULTS AND FOLLOW-UP.

Because the symptomatology is frequently so bizarre, it is wise to record follow-ups of the cases treated.

VII. INDICATIONS FOR AND ROLE OF HYDROCORTISONE INJECTIONS.

Therapeutic joint paracentesis has been practised for years. Aspirations of joints for relief of marked synovial effusion is a well-recognized procedure. Joint Irrigation, and instillation of antibiotics into the synovial cavity have been reported. The intra-articular injection of Hydrocortisone⁽¹⁷⁾, Hydroxy-corticosterone, hydrocortone (Compound F) is now used for alleviation of certain inflammatory changes of the temporo-mandibular joint, thus providing relief before judicious occlusal adjustment and so-called equilibration are undertaken.

The first injection of hydrocortisone was undertaken by Thorn⁽²⁷⁾ in 1950. At this time, he injected an inflamed knee joint and though he noted immediate relief, he interpreted the action as systemic and unfortunately did not press his work further. Hollander⁽²⁸⁾ carried the study to a conclusion, and in 1952 reported that 2,000 injections in approximately 400 patients with varying types of joint disease had been carried out. His most favourable results were obtained in knee joint cases, whereas two temporo-mandibular joint injections did not produce any success. It must be noted that Hollander first used Cortisone. Hydrocortisone, which is only one-seventh as soluble in plasma as Cortisone, diffuses less rapidly, and thus there is a retention of the anti-inflammatory hormone within the joint space⁽²⁸⁾. Other factors that have to be taken into consideration are:

(a) No appreciable effect can be expected, if the hydrocortisone is not injected into the synovial sac, and

(b) the injection into the temporo-mandibular joint, is much more difficult than that into the knee joint.

The procedure is to inject 12½ milligrams (.5cc) into each compartment of the joint. Later in this paper, we will report specifically on 46 cases so injected over the past two and a half years.

It bears repetition to say that the injection is used as an adjunct to other forms of therapy, to provide sufficient relief from pain so that other phases of therapy can be more comfortably and conveniently carried out. It is strictly a palliative local method for controlling the subjective aspects of acute temporo-mandibular arthritis or synovitis. The symptoms frequently return gradually if the underlying etiology and pathology are not treated.

The chief indications for the use of intra-articular injections with hydrocortisone are:

(1) To provide temporary relief from pain, so that correction of occlusal discrepancies can be carried out.

(2) To allow a patient to wear such prosthetic appliance as may be indicated with greater comfort; e.g., where a Hawley plane is used to modify the occlusion to aid the re-apposition of the condyle head.

(3) To speed the return of normal function to an involved joint.

(4) To provide for greater post-operative comfort where an athroplasty of the temporo-mandibular joint was necessary.

TECHNIQUE FOR T-M JOINT INJECTION

The object of the injection is to puncture the synovial sac and enter the joint space with as little pain as possible, with minimal trauma, and without introducing infection into the joint cavity. For these reasons some form of anesthesia is indicated; the finest possible needle is recommended for minimal trauma and maximum sensitivity; and strict asepsis is essential. The hydrocortisone should be injected into both upper and lower joint cavities.

MATERIALS NEEDED FOR INJECTION

1. An antiseptic solution to allow for the proper preparation of the area.

2. Alcohol sponges to wipe off the rubber stopper in the bottles involved.

3. Anesthetic solution for anesthetizing the puncture site and deeper structures.

4. Hydrocortisone acetate suspension.

5. Two 3 - cc syringes. One for the anesthetic, the other for cortisone.

6. A 20 gauge needle for withdrawing the suspension from the container into the syringe and a 25 gauge needle for making the injection.

7. Small band-aid for dressing the puncture site.

8. A razor for shaving the region, if necessary.

Injection Technique.

The joint is first located by palpating the area with the index finger while the patient opens and closes his mouth. If an imaginary line is drawn from the tragus of the ear to the ala of the nose, the joint is usually located on this line at a point $\frac{1}{2}$ inch anterior to the tragus. The operator must scrub, prepare the skin and then drape the patient with sterile towels. The joint position should be checked again. Two cc of the anesthetic solution is then drawn into a 3 cc syringe, and, with the patient's mouth opened approximately one-third full distance, a little of the anesthetic solution is deposited into the skin overlying the sigmoid notch. The remainder of the anesthetic solution is then slowly deposited as the needle is inserted deeper. A wait of about three minutes is now advisable prior to hydrocortisone injection. One cc of Hydrocortisone (25 mgm) is then taken up into the other 3 cc syringe, reagitating the suspension to promote equal dispersement and diffusion of the essential material. A 25 gauge, stainless steel, $1\frac{1}{2}$ inch needle is inserted over the superolateral aspect of the joint and directed toward the roof of the glenoid fossa. When the glenoid fossa is struck, the needle is then with-

drawn slightly and about $\frac{1}{2}$ cc of the Hydrocortisone is injected. The needle is then further withdrawn to a point just beneath the skin and re-directed and inserted slightly inferiorly until it strikes the condyle head. When this occurs, it is again withdrawn slightly, and the remaining $\frac{1}{2}$ cc of Hydrocortisone injected into the lower cavity.

The needle is then withdrawn completely, the puncture site wiped off with an alcohol sponge, digital pressure maintained for a couple of minutes, and a small band-aid dressing applied to the area for a couple of hours.

VIII. EVALUATION OF SOME CASES
CONSERVATIVELY TREATED.

It should be stated at the outset that the diagnosis, treatment planning and actual therapy of most of the cases of temporo-mandibular joint derangement here reported were the joint responsibility of the Oral Surgeon, Periodontist, Radiologist and Prosthodontist.

The great majority of these cases were the direct result of existing or acquired mal-occlusion and almost every case responded favourably once occlusal equilibration was carried out. This phase of the treatment was carried out by Dr. Zar Reader, Periodontist.

Case No. 1—This was typical of many cases encountered, and concerned a female of 22 years of age with ill-fitting partial dentures with no posterior occlusal contact. When first seen the patient complained of severe discomfort in both temporo-mandibular joint regions. The joints were injected with hydrocortisone acetate and some relief of pain was reported. However, her symptoms recurred in four weeks, at which time the joints were again injected and proper fitting partial dentures constructed. Permanent relief was the final result.

Case No. 2—This patient was a man with fixed restorations that had been placed in mal-occlusion. Over a period of time the patient had developed an acquired centric relation, and in his correct

centric he exhibited gross mal-occlusion. This had, as one might have predicted, resulted in a temporo-mandibular joint derangement as evidenced by all his symptoms. Merely correcting his occlusion by judicious grinding made him asymptomatic in three weeks.

Case No. 3—The patient was a 12 year old boy with an excessive overbite and a rest position with excessive free way space. This patient had worn several occlusal pad appliances with no appreciable success. A Hawley bite plane was constructed, which he wore for 24 hours a day for three months, and thereafter only at nights while at rest. Here again favourable results and complete relief of symptoms resulted.

Case No. 4—This was a young married woman whose acquired centric was in a protrusion relation. Only in this way was she able to obtain posterior contact. In her true centric, there was no occlusion of the posterior teeth. This patient complained of temporo-mandibular joint discomfort.

Case No. 5—A 25 year old white female had developed an acquired centric, and also exhibited marked mal-occlusion in her true centric relationship. She complained of pain in one of her temporo-mandibular joints. In both this and case No. 4 occlusal equilibration provided relief from symptoms.

Cases No. 6 and 7—These cases were similar in that only the central incisors were in contact during protrusive movements of the mandible. Again, both of these responded favourably after adjustment through grinding.

Several cases were encountered where teeth had been lost with no subsequent replacement, and development of temporo-mandibular joint discomfort resulted. We will use

Case No. 8 to illustrate this condition.

This patient, a middle-aged white male, effected his acquired centric in a protrusive position and in true centric there was actually no occlusion. His true centric was restored by grinding, the missing

teeth were properly restored and his symptoms gradually disappeared.

Several cases that were diagnosed as temporo-mandibular joint derangements exhibited mal-erupted upper third molars. When these were removed and cuspal interference corrected, cures were effected.

Hydrocortisonæ Injection—Of the forty-six injections carried out, one was for a patient with rheumatoid arthritis, while the others were for patients with degenerative joint disease. There was marked relief of symptoms in 42 cases. One case had to be injected twice before any improvement was noted. Three cases did not seem to benefit in any way by the injection.

Those that responded favourably did so within 36 to 48 hours after the injection. In each instance, occlusal equilibration was instituted as soon as possible. This included extraction of teeth, replacement of missing teeth, relief of cuspal interference and fillings. In three cases bite planes were constructed for evening and night wear.

One of the patients treated in Toronto was a 30 year old female with marked subluxation on the left joint, limited movement on the right joint cavity and deviation of the mandible to the right side. There was a history of extreme pain in the right joint over a two year period. The x-ray pictures showed narrowing of the joint space on the right side and some evidence of erosion of the condylar head. The first injection of cortisone into the right joint did not seem to accomplish anything, but following the injection of .5 cc of Sodium Morrhuate into the subluxating left joint and a subsequent injection of hydrocortisone into the right, some relief was reported. The injection of Sodium Morrhuate was accompanied with pain and marked swelling. The acute phase lasted for 36 hours, then gradually subsided. The patient had a Hawley bite plane constructed and was instructed to use it nightly. The result was encouraging for about six weeks, but the symptoms gradually returned. It is

now felt that the joint changes were too far advanced for conservative treatment to effect a cure, and the patient is now being prepared for condylectomy.

It might be of interest to report that three other extremely subluxating joints, exhibiting great motility with accompanying crackling bruit, have been injected recently by the author with Sodium Morrhuate. In all instances the results were favourable. No ill effects whatsoever were reported following these injections.

It is now felt that in the case which had to be re-injected with hydrocortisone before relief was obtained, it is possible that we were unsuccessful in getting into the joint space during first injection. It is unfortunate that only one case of rheumatoid arthritis was treated, but it would seem that the degree and duration of relief provided, was less than in the other types of diseased joints injected. Charles Horton⁽²⁰⁾ reports on three cases of rheumatoid arthritis injected with cortisone, which all showed favourable improvement.

MENISECTOMY

Nine menisectomies were performed by the Oral Surgery Division, Henry Ford Hospital from July 1951 to July 1953. The operative procedure employed is here briefly described as follows:—The hair in the temporal region was shaved and the area prepared for surgery with Hexychlor-m-cresol. The patient was draped to expose the ear and pre-auricular region, and the ear canal packed with sterile gauze. An incision was made in the fold of the anterior margin of the helix and carried downward just inside the tragus and terminated at the lower attachment of the lobule. The incision was carried through skin, subcutaneous tissues and down to the masseteric fascia. The flap was then dissected anteriorly, folded forward upon itself and sutured to the skin of the face to hold it away from the field of operation.

The dissection was then carried down

along the cartilage of the external ear, to facilitate retraction of everything anteriorly and so avoid damage to the facial nerve. All the anterior branches of the temporal vessels encountered were clamped, cut, ligated and retracted forward with the superior pole of the parotid gland. One vessel that is almost always encountered was the small posterior auricular branch of the superficial temporal vein.

The dissection was carefully carried downward and forwards until the zygomatic arch was reached and the attachments stripped from it. The condyle head was then located and identified and the capsular ligament supporting the joint exposed and opened into. The articular disc was then outlined by making incisions into the upper and lower joint cavities. The articular disc was then completely excised, the defect lightly packed with gelfoam and the wound closed carefully in layers, using 000 plain cat-gut for the deep structures and medium black silk for the skin. A dry pressure bandage was applied and maintained for at least 48 hours to prevent hematoma.

All nine cases made an uneventful recovery and the immediate post operative results were good, but in less than two months six of the cases again complained of their discomfort in varying degrees. Four were so troublesome that a condylectomy was performed. The other refused any further intervention at that time.

A typical case was that of Mrs. J. W., age 39, whose chief complaint was considerable pain in the left temporo-mandibular area. Clinical examination revealed an edentulous mouth with what appeared to be good fitting dentures. The patient gave a history of having sustained a blow on the chin about ten years previously. Prior to onset of pain, she experienced snapping of the right joint during opening and closing movements. Roentgenograms confirmed irregularity of the joint surfaces and showed evidence

of narrowing of the joint space on the left side.

On March 29, 1952 both joints were injected with hydrocortone acetate, and this produced some temporary relief. On April 22, 1952 the joints were re-injected, but no relief was obtained at this time. On May 27, 1952 a menisectomy was done on the left temporo-mandibular joint, but on June 4, 1952 she again complained of pain. Progress films showed erosion of the superior portion of the condyle. A further injection of hydrocortone acetate was carried out on September 14, 1952 and this was followed with six treatments with deep x-ray therapy. The patient appeared to be somewhat improved until November 18, 1952 when she again complained bitterly. A condylectomy was decided upon and this was done on January 19, 1953. At this writing the patient is still quite symptomless and comfortable.

In July 1951, Dingman and Moorman⁽³⁰⁾ reported excellent results following menisectomies. The surgical procedure employed by them closely paralleled that which we used. Others have also reported similar operations with more favourable results than ours.

Dr. Rolf Wang-Norderud, Oslo, writes that he has made made extensive use of "discus extirpation," and that though the immediate operational results were often good, the subsequent examination of the cases was not very encouraging. He now resorts to this type of surgery only when there is detachment or considerable rupture of the disc. He reports a very ingenious technique whereby he performs an osteotomy on the mandibular ramus aimed at repositioning the condyle in the fossa. His operation reported in the Dental Record Vol. LXXIII, July and August 1953 is recommended for study. Through a personal communication Dr. Wang-Norderud states that he has obtained some success by employing this unique technique. He stresses occlusal equilibration as an integral part of the treatment.

Considering that a fracture of the con-

dyle must be effected, it seems to the writer that room for delayed complications is ever present. We also find it difficult to be in complete accord with the surgical approach to the condylar area as we understand it from his writings. It would appear that the possibility of facial nerve damage, except perhaps for very experienced operators, is very imminent.

Surgery for temporo-mandibular joint derangements (in the sense employed in this paper) is elective and can be considered radical. If it is decided upon, then a condylectomy is our procedure of choice, because of the excellent results which we have obtained with this procedure.

VIII—CONDYLECTOMY.

Data in a series of 18 condylectomies performed between June 1951 and June 1953 will now be reported. Four of these were done following a previous menisectomy which had failed to relieve the patient's discomfort. Indeed because of the severity of the affliction, further surgical intervention was deemed justifiable. Two cases that showed marked degenerative condylar bone changes radiographically. The subjective symptoms were truly extreme. Four cases exhibited ankylosis of one or both joints. Finally, eight condyles were removed because, as a result of traumatic fractures, the condyle heads were too badly shattered to attempt reduction, or to hope that no complications would ensue if they were left alone.

The surgical approach for a condylectomy was the same as that described for a menisectomy insofar as entering the joint cavity and exposing the condyle head is concerned. In a few cases the angle of the mandible was exposed, and a hole drilled through the bone to allow for the threading of a stainless steel wire by which downward traction could be applied to provide better access in the joint area. This is not absolutely necessary, however, and merely having the anesthetist manipulate the jaw beneath the drapes usually suffices.

When the condyle head and subcondylar area were exposed it was possible to drill burr holes at whatever level decided upon, and then with a generous blow with a mallet and chisel separate the condyle from the ramus. The condyle was then grasped with a suitable hemostat and the lateral pterygoid muscle carefully detached from its insertion on the condyle. At this stage extra caution is emphasized, because the internal maxillary artery usually lies nearby and it may be severed with embarrassing consequences. The condyle head was then completely freed and finally delivered through the wound.

In the last ten cases in which this procedure was carried out a piece of bovine cartilage was employed in the defect. Gelfoam was packed into the cavity, the wound closed in layers and a pressure Ace bandage applied and maintained for at least 72 hours. The jaws were subsequently immobilized in centric occlusion by means of intermaxillary wires. Ivy loops or arch barn were employed, these being adapted to the jaws prior to surgery. In edentulous jaws the patient's dentures provided with lugs were used. A Barton bandage was also applied.

Immobilization is necessary for three weeks. It allows healing to take place in centric, so that occlusion and mastication are not seriously affected. It seems that the insertion of the bovine cartilage compensates for the slight mandibular deviation that sometimes accompanies this type of procedure. However, there are not sufficient data yet available to enable us to draw conclusions as to the efficacy of this practice. It is not yet known for instance, exactly what happens to the cartilage. To date no untoward reactions have been encountered. Maintaining the pressure bandage for 72 hours can be quite comfortable and sedation was generally necessary. It was found nevertheless, that this was an invaluable measure in preventing hematoma and edema.

All 18 cases recovered uneventfully, function was good, the cosmetic result excellent; and in the case of temporo-

mandibular joint derangement, relief of symptoms was sure and apparently permanent. Two representative cases to illustrate this are herein reported:—The first involved Mrs. E. L., a white female of 41 years. Her chief complaint, when first noticed in August 1952, was headache, ear-ache, pain in the occipital and temporal regions radiating to the jaws and pronounced snapping in the left Temporo-Mandibular joint. The diagnosis was Degenerative Arthritis of the joint.

On September 12, 1952 the left joint was injected with Hydrocortone Acetate, and although this seemed to make the joint less painful, all the other symptoms persisted. On September 22, 1952 a meniscectomy was performed, and suitable dental restorations were constructed. Some improvement was noted, but by March 26, 1953 there was complete recurrence of all symptoms to an even greater degree. X-rays taken at this time showed irregularity of the condyle head and a limitation of motion of that side.

On April 9, 1953 a condylectomy was performed and the pathological report of the specimen submitted was as follows:—"Articular cartilage shows thinning out and degenerative changes. Cartilage is completely missing in certain areas and the underlying bone is exposed. There appears to be fibrosis of the articular surfaces."

On May 27, 1953, the patient was quite comfortable and some additional restorative dental work was then carried out. As of December 20, 1953, the patient was still asymptomatic and content.

Case No. 2 was a 31 year old white female; D. W. For the past 18 years she had experienced difficulty in opening her mouth. She now complained of severe pain in the right temporo-mandibular joint. There was a history of multiple joint disease.

A condylectomy was performed and at the time of surgery it was noted that the articular surfaces were irregular and pitted. There was also a large defect in the meniscus and some flaking of the cor-

tical bone of the condyle. The pathological report in part was as follows:—"Articular surface of condyle replaced with fibrous tissue. It is irregular and shows nodularity and some erosion." This case made an uneventful recovery, with very gratifying results.

Subsequent mandibular deviation resulted in only one case. This concerned a 15 year old white girl; S.T., who presented with generalized arthritis and marked ankylosis of the right mandibular joint. She had a history of poliomyelitis. A condylectomy was performed on April 1, 1953, and when last seen on November 15th, 1953 there was some deviation. The correct dental prosthesis was being constructed at that time and we now understand that function is very good.

The deviation in this case, can perhaps be explained through loss of growth as a result of removal of the condyle at such a tender age.

There are those who insist that all subcondylar fractures require no other treatment, except intermaxillary wiring. It is hard to reconcile ourselves to such a dogmatic way of thinking. Sometimes, when there is marked medial displacement of the condylar fragment, such a compromising procedure might have embarrassing unfavourable results (33). To illustrate we use the case of Miss A.E., who suffered a subcondylar fracture in 1947 and simply had "her jaws wired up for four weeks". When she presented, she complained of repeated discomfort in the Temporo-Mandibular Joint region and of a "shift" of the mandible to the affected side, with resultant deformity.

X-rays showed that the right condyle had been sheared off and healed in a medial position. An Arthroplasty was done on January 19th, 1953 and partial dentures subsequently constructed, to allow for a balanced bite. This case was extremely successful.

IX. CONCLUSIONS.

From our experience with over one hundred cases it would seem that most

cases of temporo-mandibular joint disorders are due to occlusal discrepancies, be they acquired or inherent. Regardless of whether the affliction is due to a single severe trauma, or to repeated microtraumas, as is the case with malocclusion, it can best be treated by conservative means, and with due co-operation of all interested dental personnel.

It can be stated that the injection of cortisone has a specific action in the reduction of inflammatory changes within the joint. Such treatment is only palliative and temporary, but is to be recommended to reduce inflammatory pain and trismus, and thus allow one to proceed with an orderly program of occlusal rehabilitation.

It would seem that painful joints that give radiographic and clinical evidence of irreversible changes might eventually require surgical intervention. It is our opinion that meniscectomy does not provide the satisfactory result desired, or so often reported. We feel that condylectomy is the procedure of choice. This operation does not necessarily produce the deformity so often ascribed to it; facial paralysis is negligible if certain precautions are taken, and sound surgical technique employed.

HYDROCORTISONE INJECTION.

Cases injected	46
T.M. Joint Syndrome	45
Rheumatoid Arthritis	1
Temporary Elimination of Pain	42
Failure	4

MENISCECTOMY

Cases operated	9
Complete success	1
Partial success	3
Failure	5

CONDYLECTOMY

Cases operated	18
Complete success	16
Partial success	2
Complete failure	0

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From the viewpoint of the oral roentgenologist, dentistry is a health service of which prevention is an extremely important aspect. The dentist should never lose sight of the fact that his chief responsibility is to conserve the human dentition. One of the most effective instruments in conservative dentistry is the roentgenogram, properly taken and correctly interpreted.

Lee Roy Main, D.D.S., *Journal of the American Dental Association.*

Terramycin starch powder and sponge is an effective hemostatic agent. In our study there is no evidence of any undissolved particles or foreign matter found in any operative areas postoperatively. The clots were, in all instances, normal and healthy in appearance. One other fact to be mentioned along with the mechanical action of hemostasis is that the surface tension of the clot is increased and, by this action further hemostasis is achieved.

The antibiotic effect of the Terramycin aided in the elimination of the postoperative breakdown of clots so often seen.

Peter J. Diconza, B.S., D.D.S., *Oral Surgery, Oral Medicine and Oral Pathology.*

The present status of dental focal infection

Second Prize Essay War Memorial Award Competition

by W. P. HANNA, D.D.S., Calgary, Alberta

The modern theory of focal infection appeared at the turn of the century, the work of an English physician, Hunter. He considered the etiology of bacterial endocarditis, osteomyelitis, nephritis and other diseases to be "oral sepsis".¹ A year later in his second paper, published in *Lancet*, he added ill health, chronic rheumatism and other systemic disease to the sequellae of "oral sepsis".² He defined "oral sepsis" as embracing not only ulcerative gingivitis and pyorrhea alveolaris, but also rarifying osteitis and dental caries, associated with gold fillings and crowns on diseased teeth, which, to him constituted "a veritable mausoleum of gold over a mass of sepsis".

This was a relatively new idea. The healing arts are indebted to it for revolutionizing clinical and bacteriological investigation and diagnosis. Techniques of restorative dentistry in particular have so improved that now they leave little to be desired except esthetic color. However, because of misunderstanding, there were relatively undesirable results also: over-enthusiastic and wholesale removal of healthy teeth and tonsils followed, and a great many people had these useful organs removed unnecessarily, without receiving cure or alleviation of their various physical ailments. Over the years, close observation of the benefits derived from promiscuous removal of teeth have led many of the members of the healing professions to question the soundness of the theory of focal infection. Few subjects in medicine or dentistry have become more controversial, especially in relation to rheumatoid arthritis and similar diseases. In the last ten or fifteen years, carefully conducted scientific investigations have led many authorities who formerly felt that focal infection was an important etiologic factor in systemic disease, to become sceptical. Now

they recommend less radical procedures in the treatment of such disorders.³ It is interesting to note that the theory of focal infection and the implication of teeth as oral foci developed well before the widespread use of dental roentgenographic machines and the refinement of this aid to dental diagnosis.⁴ Better bacteriological diagnostic methods have been developed in recent years. Grossman points out that, "It is a disconcerting but true statement to make, that practically every investigation dealing with the pulpless tooth and made prior to 1936 is invalid in the light of recent studies".⁵

Appleton in 1944 stated that "any localized infection is potentially a focus of infection". He emphasized that there must exist a demonstrable tissue reaction to bacteria before infection can exist. In other words, the mere presence of bacteria does not constitute infection. Focal infection, however, requires the development of secondary lesions, traceable to this primary focus.⁶ Shuster stated, "... focal infection implies metastases, from the infected foci, of bacteria, or their toxins, capable of injuring contiguous or distant tissues".⁷

Many examples can be found in which infection in one part of the body yields bacteria or toxic products to the blood stream with the result that an infective process is started in another part. Examples of this metastatic spread of micro-organisms appear in the tuberculous patient who has primary foci in the lungs followed by metastases in the kidneys or bones, or the gonorrheal patient whose primary infection is in the urethra or prostate and secondary infections appear in the joints or iris. The causative organisms of the metastatic lesions have been repeatedly proven bacteriologically to be the same as those in the primary areas.⁸ Appleton reminds us that "Staphylococci in a boil may eventually be responsible for an osteomyelitis or a renal abscess".⁹

Sir William Boyd says that when an infected focus has a local tissue reaction there are the following theoretical possibilities:

(1) The bacteria may pass into the lymphatics and cause lymphadenitis of the regional lymph nodes. (2) They may enter the blood stream, multiply there and set up an acute or chronic septicemia. (3) They may not multiply in the blood, but may settle in some distant part and multiply there. This is what is usually known as focal infection. (4) They may remain localized, but their toxins may be absorbed and set up degenerative and fibrotic changes in distant organs.¹⁰

In most instances the primary foci of infection are acute or chronic, diffuse or circumscribed. Those subject to movement or compression, or both, such as periodental foci, will enhance the entrance to the blood and lymph streams by the micro-organisms and their products.¹¹

A number of dental foci have been included in primary oral infections: gingivitis and gingivo-stomatitis infected root canals, vital or non-vital infected pulps, periodontitis, alveolar abscesses, apical and peri-apical infections, infected impacted teeth, retained infected roots, residual infection of bone after extraction, infected cysts and osteomyelitis of the jaws.¹² Denticles are the result of physiological changes of the pulp, so have no significance in focal infection.¹³ Cementomas are due probably to anomalies of development rather than infection.¹⁴ Completely impacted teeth (which have not erupted through the bone) are not contaminable by saliva, so are not likely to be infected.¹⁵ The same is true of fractured roots which escape exposure to saliva or other sources of infection. A fractured root of an anterior tooth exhibiting roentgenographic evidence of a calcified repair, and without unusual periodental translucency, may be considered as healthy as any vital anterior tooth.¹⁶ Clinical experience has shown that infected deciduous teeth are just as important as those of the permanent denti-

tion from the standpoint of possible focal infection.¹⁷

The insignificance of the dental granuloma in focal infection does not appear to be settled. It is agreed that the granulation tissue is a manifestation of a vigorous body defence and repair reaction, in which the cellular elements of the blood are highly concentrated. However, a large percentage of the granulomas so cultured as to prevent contamination are negative for bacteria. The possibility of metastatic infection from an infected granuloma exists, but because of the strong body defence reaction developed in the area, the chances of it occurring are probably small.¹⁸

Devitalized and root-filled teeth were long condemned as foci of infection capable of metastasis. If the root-canal surface is rendered sterile, and the canal well sealed, repair of the destroyed periodontal bone will take place, and the pulpless tooth need no longer be considered as a hazard to health.¹⁹ Frankl in 1948 resected a second time two teeth, one of which was root treated and filled two years previously and the other nine years previously. Microscopic examination showed no trace of inflammatory reaction, and no bacteria could be demonstrated with Gram stain.²⁰ It seems likely then that successful endodontic treatment may be assumed if the subsequent roentgenograms show the formation of typical cancellous bone filling the radiolucent area within a period of about six months.²¹ The "Ninth Rheumatism Review" states that the attitude toward removal of non-vital teeth by the majority of internists, who are treating rheumatoid arthritis, is "... that only definitely infected foci should be removed, and then not to cure the disease but to improve general health".²²

Periodontal disease is probably one of the most important dental foci of infection. A great many people have at least a mild gingivitis. Burkett estimates that even a mild gingivitis can cause a total lesion of over eight square inches.²³ As

well, bacteria may easily enter the blood stream from diseased periodontium, under a variety of conditions, causing transient bacteremia. Simple massage of the gums, chewing hard candy, scaling or gingivectomy, and especially dental extractions will produce transient bacteremia.²⁴

Bacteremias are made possible during extraction by invasion of micro-organisms through the gingival crevices by the pumping action of forceps and elevators and the suction-like action of the venous blood, until such time as coagulation has occurred, or the post-traumatic inflammation seals the veins. Local anesthetic with a vaso-constrictor tends to reduce their incidence. Needless to state, the extraction of frankly abscessed teeth is more likely to result in bacteremia than that of roentgenographic negative teeth. However, positive blood cultures have been observed following the latter.²⁵ It is well to note also that no cases of subacute bacterial endocarditis are reported as having followed root canal therapy.²⁶

The fact that bacteremias are usually transient following dental procedures is shown by their occurrence usually within ten minutes after manipulation of foci of infection, and their rare incidence after one-half hour or more has passed. It would seem then, that the invading bacteria are rapidly removed from the blood by its defensive and immunological processes and the reticulo-endothelial system.²⁷ The bacteria, however, do have weapons with which to fight their way. Streptococcal fibrinolysin and proteinase are important agents tending to assist beta streptococci in bacteremia. The same is true of hyaluronidase produced by some of the streptococci, staphylococci and pneumococci. This enzyme promotes breakdown of collagen in connective tissue, and may also increase capillary permeability.²⁸ It should be noted that bacteremias following dental operations are usually due to alpha and gamma streptococci, staphylococci, beta strepto-

cocci and pneumococci, in that order of frequency.²⁹

Assuming that bacteria can escape from a primary focus and survive at least for a while the hazards of the blood, it becomes necessary to determine the factors which decide the localization of the bacteria. The classical bacterial embolus will stop when it reaches a vessel too small to carry it. Trauma to an area, for example, a joint, may cause a localization followed by an infectious arthritis. Localized anoxia and inflammation may cause an increased capillary permeability, so that bacteria could escape into the perivascular tissues. Cavitaminosis will increase capillary fragility.³⁰ Capillary occlusion due to scarring, as in congenital or chronic valvular heart disease, will localize blood-borne bacteria. Inflammation, whatever the cause, may be responsible for the localization of bacteria from the blood (anachoresis).³¹ Keeping these possibilities in mind it is easy to understand why some individuals with minor primary foci of infection can develop diseases potentially due to focal infection, while others with obvious foci escape these diseases at least temporarily.³²

There is no doubt that blood-borne toxin from an oral or pharyngeal focus of diphtheria produces systemic lesions in the heart, kidneys and some peripheral nerves.³³ In this sense it could be classed as a focal infection. Some investigators have suggested that lesions of rheumatic fever may be due to toxins produced in various foci by beta streptococci. Whether or not bacterial toxins play a role in the etiology of other diseases of focal infection cannot be stated authoritatively. The possibility must be admitted in those cases which show spectacular recovery following the removal or drainage of primary foci. It must be remembered that chronic inflammation and encapsulation may prevent absorption of toxin and that once in the blood, they may be neutralized by antibodies.³⁴

Bacteria or their soluble products from a focus of infection could quite conceiv-

ably produce a hypersensitivity in a secondary focus. Freyburg thought in 1946 that the relation of focal infection to rheumatic fever and rheumatoid arthritis could be through acquired allergic sensitization to streptococci or their products.³⁵ Rich and Gregory apparently produced chronic inflammatory synovial changes experimentally in rabbits by active sensitization with horse serum. These results indicate that anaphylactic sensitization could play a role in the genesis of rheumatic lesions.³⁶

Theoretically, any acute or chronic, localized or diffuse primary focus or source of infection may produce ill health. It is prevented, fortunately, in the greatest percentage of cases by local resistance to vascular dissemination of micro-organisms and their products, and by specific natural or acquired immunity. If primary foci do not receive prompt and adequate treatment, the natural resistance could be lowered. Then the individual would be predisposed to any disease that came along, as well as to those of focal infection. Among the conditions occurring from focal infection, and presumably resulting from the absorption of toxic bacterial products may be listed: general debility and fatigability, anorexia, loss of weight, excessive drowsiness, headache, hypochromic anemia, acquired hypotension and general reduction of immunologic resistance to intercurrent infections.³⁷

The role of focal infection in the etiology of some diseases has been proved, while in others the available information merely indicates that it could be a factor. Some diseases are due to septice-mias secondary to primary foci of infection, such as acute bacterial endocarditis, suppurative arthritis and nephritis. Many are due to bacteremia or toxemia, for instance, subacute bacterial endocarditis, some cases of acute pericarditis, gonococcal arthritis, acute miliary tuberculosis, etc. Some are due to lymphogenous infection secondary to primary sources of infection, as for example, lym-

phadenitis. Others are apparently due to secondary infection by direct continuity as certain cases of thrombophlebitis. A few others are probably due to allergic sensitization to infecting micro-organisms or their soluble products, with rheumatic fever being an outstanding example.³⁸

In spite of the widespread distribution of non-hemolytic streptococcus, it is rarely reported as the cause of infection except in subacute bacterial endocarditis, and in teeth and their surrounding structures.³⁹ Scientific studies of root canal cultures indicate that the anhemolytic streptococcus and viridans streptococcus are the organisms usually recovered there, whereas the hemolytic type are most infrequent.⁴⁰

Many types of arthritis are due to infections by specific organisms such as the gonococcus or tubercle bacillus. Their treatment is a problem for the physician, not the dentist, for foci of infection in the mouth are rarely a cause of this group of joint diseases.⁴¹ It is probably safe to conclude that oral foci can be disregarded as etiologic factors in such joint diseases of known infection, unless that infection can be demonstrated in those oral foci.

Rheumatoid arthritis is a systemic disease, not just a joint involvement. Nearly half the autopsies on rheumatoid arthritis studied by Baggenstoss and Rosenberg revealed accompanying heart lesions.⁴² Yater thinks that foci of infection in the teeth and tonsils appear to have some relationship to rheumatoid arthritis, but their part may be relatively minor.⁴³ Freyberg believes that rheumatoid arthritis could result from an alteration of the patient's synovia by a trigger mechanism, which in turn could result from a focus of infection. He adds the cautionary note that he has not seen a patient "... who has had rheumatoid arthritis for more than a year in whom there has been any evidence of benefit to the articular disease by removal of infection from the oral cavity..."⁴⁴ Further research is needed before the etiology of this disease can be definitely stated. Any

theory ascribing the origin to dental focal infection is difficult to accept unless those foci can be shown as causing a trigger mechanism or alarm reaction.

Freyberg says that the production of osteoarthritis has no connection with infection, so that removal of foci cannot possibly be of any therapeutic importance to the disease.⁴⁵ Gouty arthritis accompanies anomalies of purine metabolism, so dental foci could have no connection.⁴⁶

It appears that little work has been done in an effort to establish dental focal infection as an etiologic agent in ophthalmic disease. In order to do so it will probably be necessary to show that the normal bacterial residents of infected teeth and periodontium can themselves, or by their products, produce an hyperallergic reaction in the tissues of the eye, due to a sensitization by previous bacterial invasion of the body.⁴⁷

Curtis summarized the relation of dental focal infection to dermatosis by saying, "Probably, focal infection is of little concern". Easlick et al found that an identified organism which could have reached the urinary tract of a patient hematogenously from the root end of a non-vital tooth is very rare.⁴⁸

Friedberg ascribed the etiology of acute bacterial endocarditis to the hemolytic streptococci in about ninety-five per cent of cases.⁴⁹ Kinsella reported that *Staphylococcus aureus*, hemolytic streptococcus and the pneumococcus are the organisms especially prominent in the etiology of acute bacterial endocarditis. He thinks that subacute bacterial endocarditis depends on two essential factors: a pre-existing injury of the valve, and a recent infection invading the blood stream. He summarizes a typical case history as being of a patient with rheumatic valvular heart disease suffering from an infection such as tonsillitis, abscessed teeth or otitis media, organisms from these lesions entering the blood stream, and localizing in the damaged heart valves. The non-hemolytic streptococcus is responsible, in his opinion, for

ninety to ninety-five per cent of the cases of this type of endocarditis.⁵⁰ Swift has found that Lancefield Group A streptococci are the most constantly demonstrable bacteria associated with attacks of rheumatic fever. At the time of onset of an attack, he has found this strain of streptococcus in the throats of fifty to seventy-five per cent of the patients.⁵¹ Kelson and White reported their findings of a study of two hundred and fifty cases of subacute bacterial endocarditis followed during a period of twelve years. All the patients had positive blood cultures for viridans streptococci except rare cases which showed the non-hemolytic type. Most of them had a history of previous heart disease, either rheumatic valvular disease, or congenital defects. About one-quarter of the cases gave a history of dental procedures, especially extractions, as being a predisposing cause of the illness.⁵² It would seem that hearts are damaged by congenital defects, rheumatic fever, primary bacterial injury especially by hemolytic streptococci, and secondary infection by viridans strains of streptococci. Although dental interference is not the only means of entrance for the bacteria, a goodly portion (about one-quarter) of the cases report it as preceding the illness.⁵³

Obviously, patients with heart disease need special care in the treatment of their teeth, with the stress on prevention. Dental caries should be restored while they are incipient. Periodontal disease should be prevented by regular examination and scaling, with emphasis on adequate home care. Should a patient with heart disease develop periodontal disease or bad carious conditions, and present for treatment, three steps in this order should be taken: (1) Quickly establish a therapeutic blood level of sulfonamide or antibiotics and maintain it through the treatment. (2) Clean the teeth and gums as much as possible, as well where extraction is indicated as where less radical procedures will be used. (3) If extraction is indicated, it

should be done in stages,⁵⁴ under local anesthetic with a vaso-constrictor. Although bacteremias in the normal healthy individual are probably of little significance, they are highly important in patients with valvular heart disease, because of the possibility of the bacteria localizing in a brief period and initiating a bacterial endocarditis.⁵⁵

The role of dental focal infection in valvular heart disease may be summarized by saying that viridans streptococci are usually found as the cause of sub-acute bacterial endocarditis, these organisms are common residents of the mouth and infected root canals, and can easily cause a transient bacteremia during dental procedures, and subsequently localize in damaged heart valves. A properly conducted case history will reveal the condition to the dentist. Then an adequate blood level of one or more of the antibiotics or chemotherapeutic agents will prevent the bacteremia and its possible sequelae.

It will probably always be true that it is easier to prevent the diseases of focal infection by prompt and adequate treatment of primary foci, than to cure them once they are well established. Prompt eradication of primary foci of infection is a basic principle in the treatment of the diseases of focal infection. Antibiotics and chemotherapeutic agents work especially well against acute primary infections. Surgical drainage or removal may be required in long neglected cases.⁵⁶

It is apparent that some patients could have multiple primary foci of infection. When this is the case, any one particular focus assumes less significance in relation to the general condition and diseases potentially due to focal infection. It often presents a difficult problem for the physician or dentist to decide which focus to eliminate first. An effort should be made to eliminate all the primary foci of infection. Kolmer claims that primary foci of infection need not be inflammatory at all, and failure to detect them does not necessarily exclude their presence, or

their previous existence.⁵⁷ It is possible that the secondary disease, when once established, becomes an entity independent of the primary focus. Then removal of the primary focus could not help the secondary disease. Greater skill and care and better judgment and diagnostic methods will help to reduce the number of established secondary diseases.

The Dental Research Discussion Group of Sydney, Australia, made the following rather trenchant remarks regarding dental focal infection:

... no one would take exception to removing a tonsil, an appendix, or a dead tooth because of persisting local pain or discomfort, but to remove them in the hope of curing a systemic disease is something else again and is merely clutching at a straw⁵⁸

Before it is decided to remove teeth as a treatment for a condition which has not yielded to other treatment, we must make two careful determinations: (1) Is there sufficient evidence to warrant the extraction? (2) How will the mouth be rehabilitated following the extraction?⁵⁹ In the final analysis, the proper answers to these two questions will depend upon the individual case in question, but with a full realization of the facts of dental focal infection.

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NOTE

The information in the above reference numbers: 1, 2, 7, 8, 22, 39, 40, 41, 42, 47, 49, 50, 51, 52, 54, 55, 58, and 59, appeared in the article "An Evaluation of the Effect of Dental Foci of Infection on Health", by Easlick, K. A., and others, *J.A.D.A.*, 42: 653, June 1951, while numbers 24 and 36 appear in Kolmer's article, "Focal Infection in Relation to Health and Disease", *J.A.D.A.*, 45: 141, Aug., 1952.

CONVENTION DATES — MAY 15-18, 1955

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Case report - Apicoectomy

by WILLIAM W. BRESLIN, D.D.S., Toronto

HISTORY:

Miss Beverley B., age 19, was referred to this office for the removal of a cyst in the left upper central region. She did not complain of pain in the area, and was content to continue without treatment. Her dentist, however, related her fatigue to possible reaction from this condition, and persuaded her to submit to surgical correction.

CLINICAL EXAMINATION:

Her teeth were in excellent condition without any evidence of gingivitis, or periodontal pockets. There was no swelling, but there was sensitivity to palpation over the apical region of the central and left lateral. The right central and left lateral reacted to vitality tests.



FIGURE ONE
Preoperative—Jan. 27, 1951

RADIOGRAPHIC EXAMINATION:

Occlusal radiographs indicated an area over the apices of the right central, left central and left lateral. (Figure one. Palatal view of upper teeth showing cyst in lingual.) Intra-oral films disclosed area more closely related to the left central. (Figure two.) This suggested possible apicoectomy and the patient was advised. Her dentist consented to treat the root canal which was filled with copper amalgam. (Figure three root canal filled.)

SURGERY:

Infraorbital injections with infiltrations were made with 1½% monocaine solution. A diagonal incision was made with a lancet from the labial fold over the

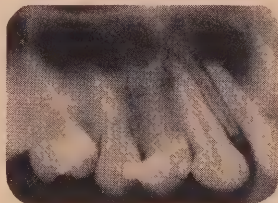


FIGURE TWO A
Preoperative
Jan. 27, 1951



FIGURE TWO B
Preoperative
Jan. 27, 1951

right central, to the apical end of the left cuspid. The mucosa was deflected away from the incision until the bone was exposed. A sharp hand chisel penetrated the thin wall of the cyst cavity above the left central, the opening being enlarged to expose the root end of the left central.



FIGURE THREE
Root canal filled
February 1, 1951

The labial plate of bone was removed until access was possible through the circular window of 8 mm. diameter. The root end was sectioned with an automatic chisel, and the cyst removed with a curette. The root end was filed and the outline of the area smoothed. The wound was flushed with hydrogen peroxide, and the tissues replaced along the line of inci-



FIGURE FOUR
Left central Root resected
Feb. 1, 1951

sion. Black braided silk sutures were used for closure. (Figure four. Root end removed. Cyst removed). (Figure five post operative Oct. 6/51.)



FIGURE FIVE
Post-operative
Oct. 6, 1951



FIGURE SIX
Post-operative
December 18, 1952

CONCLUSION

The sutures were removed after seven days, February 8, 1951. The patient experienced no difficulty and explained that the capsules of amidopyrin, phenacitin, and aspirin were not required. Periodic examination indicated good progress. The final radiograph, taken December 18, 1952, indicated regeneration of bone in the area of operation. (Figure six. Almost 23 months later.)

ABSTRACTS

Authorized Absenteeism From School, For Routine Private Dental Care

by LEONARD F. MENCZER, D.D.S., M.P.H.

Public Health Reports—Vol. 69, No. 12, Dec. 1954.

The purpose of this abstract is to point out some of the factors that need to be considered in assaying the problem of excusing children from school during school hours in order to receive routine private dental care, and to ascertain existing practices in boards of education, nationally, as it pertains to this matter.

Questionnaires were mailed to all cities in the United States with populations of over 90,000. Of the 125 questionnaires, 94 replies were received. Fully two-thirds of those reporting (63) authorized the practice of excusing children for dental health purposes. Seventy-five per cent of the questionnaires were returned completed, many with an accompanying letter offering additional information demonstrating much interest in this subject.

It was learned that the State of California has specific legislation authorizing unlimited absenteeism for dental health appointments and that several States have formulated such policy at the State level worked out jointly between the State department of education and the State department of health.

From the 63 replies, it was learned that 23 boards of education have formal written policy permitting private dental care during school hours. With two exceptions the remaining boards have developed

this formal policy since 1949 — which demonstrates somewhat the growing recognition of the importance of good oral health.

The problem of excusing children during school hours has many facets, and no one solution is applicable to every community. Certainly, in considering this problem, thought should be given to the following:

The age of the child.

The threshold of the child's fatigue.

The DMF index of the community. (The DMF index is the mean number of decayed, missing, and filled teeth per person; it is a useful tool in measuring dental health conditions.)

The amount of effective demand for dentistry.

The number of dentists practising dentistry for children.

The time, distance, and transportation factors involved between the school and the private dentist's office.

The availability of dentists who are interested in children's dentistry, and

The ratio of dentists to the general population.

The health and welfare of the child is of primary consideration, and his best interest must be served. Only by the educator's understanding of the problems associated with children's dentistry and only by the dentist's understanding of the problems associated with educational interruptions can a solution be found that will work to the best advantage of the child.

Biomechanics and Artificial Posterior Teeth

by CHARLES H. MOSES, D.D.S., M.Sc. (Dent.)

The Journal of Prosthetic Dentistry—Nov. 1954

The majority of dentures are not constructed in accordance with present day concepts of balanced occlusion. One reason for their apparent success is that teeth do not occlude during mastication. The masticatory stroke is of a different nature than that pictured by rubbing two dentures together on an adjustable articulator. The neuromuscular system and man's adaptive capacity also help.

A study of the masticatory cycle reveals that it suits the pattern of natural worn or flat teeth perfectly. The worn teeth of aborigines present a most efficient mechanism with sharp cutting knives and food escapes. Also, the slope of the occlusal surfaces present an ideal pattern for tooth arrangement. This natural mechanism is incorporated into a design for posterior teeth which every dentist may construct in his own laboratory.

Upper and lower teeth are set up on an adjustable articulator using flat posterior teeth. The lower bicuspid and first molar are tilted buccally while the second molar is tilted lingually. With this arrange-

ment it is possible to balance the dentures, the second molars making contact on the balancing side. All teeth are set in a curve so that they make continuous contact during the antero-posterior glides.

The lower denture is then removed and a new ring placed on the articulator, a rim of wax is placed upon it. This is filled with plaster into which is embedded the upper denture, thus giving a pattern of the occlusal surfaces and some of the buccal surface of the posterior teeth. The latter is completed in a separate matrix. This is repeated for the impression of the lower posterior teeth.

A narrow strip of sheet casting wax is folded into accordion pleats, the edges of which are pressed to conform to the pattern of the flat impression of the occlusal surfaces. This is cast in white gold. The same plaster index is used in forming the wax pattern of the posterior teeth, containing the ribbon of gold. The wax mould is flaked and processed in acrylic of the correct shade. Thus, four blocks of posterior teeth with metal inserts are created. These replace the original posterior teeth in the waxed up denture and the complete dentures are processed. The metal is then exposed by cutting away the acrylic material, leaving about a millimeter of the gold cutting knives.

Lichen Planus

by A. I. DARLING, M.D.S., F.D.S.R.C.S., L.R.C.P., M.R.C.S., and H. S. M. CRABB, M.D.S., F.D.S.R.C.S., Bristol, England.

Oral Surgery, Oral Medicine and Oral Pathology, Dec. 1954.

On the mucous membrane the basic lesion presents as a white pinhead papule, while on the skin the papule is flat and angular, smooth and shiny, and violaceous in colour. Lesions on skin and mucous membranes can occur together or independently, and any part of the body can

be affected. It is noted that oral lesions may be associated with ulceration.

The essential pathology of the papule is common to skin and mucous membrane lesions and consists of a clearly limited inflammatory disturbance in the papillary layers of the dermis, showing principally a round-cell infiltration and edema. The epidermis is increased in size and shows hyperkeratosis and acanthosis. Modification of this pathologic picture by enhancement or suppression of the features of the basic papule leads to a variety of clinical forms on the skin such as verrucous, obtuse, bullous, erythematous, and atrophic

forms, some of which have counterparts on the mucous membrane.

The course of the disease is outlined: a rare acute form of the disease may occur in which the patient can be extremely ill, but the more common form gives rise to no obvious disturbance of general health, although patients often complain of skin lesions as being "itchy." The disease may continue for years with recurrence and remission.

In diagnosis of lesions of the mouth, lichen planus may present with or without ulceration, and must be differentiated from traumatic erosions, exudative pro-

cesses, aphthous ulceration, lupus erythematosus, syphilis, moniliasis, and leukoplakia. An examination of the literature shows that some difficulty may be found on occasion in distinguishing between leukoplakia and certain forms of lichen planus. With any doubtful lesion a biopsy should be performed, as leukoplakia is precancerous while lichen planus is not.

The etiology of lichen planus is unknown, and therefore all treatment is empirical. Dental treatment should consist of the elimination of oral sepsis and irritation, and the maintenance of oral hygiene.

Cariogenic Potential of Various Carbohydrates

by WILLIAM G. SHAFER, D.D.S., M.S.

The New York State Dental Journal, December 1954.

An experiment has been carried out to determine the cariogenic potential of various carbohydrates. A series of hamsters was fed diets composed chiefly of fructose, glucose, lactose, maltose, sucrose, dextrin, raw starch and soluble starch, respectively. The caries scores, although too few animals remained in some groups to be considered significant, suggest that:

1. The three polysaccharides, dextrin, raw starch, and starch, have a very

low cariogenic potential, with dextrin having the highest of the three.

2. Sucrose has the highest potential of any carbohydrate tested.
3. Fructose and glucose have intermediate potentials with fructose being lower than glucose.
4. Maltose has an extremely low cariogenic potential, approximating that of dextrin.

Although it has not been possible to correlate these findings with any physical property of the sugars, a relationship to differences in the bacterial enzymatic activity on the various substrates is suggested. It is hoped that interest may be stimulated for further studies in this particular phase of caries research.

Temporomandibular Arthrosis

by GEORGE T. HANKEY, O.B.E., T.D., F.D.S.,
L.R.C.P. Lond., M.R.C.S. Lond.

British Dental Journal.

An effort has been made to analyze the signs, symptoms and treatment of 150 cases of temporomandibular arthrosis.

The analysis corroborates earlier findings, that women aged 20-30 are most prone to this complaint, and, in the whole

series women more often than men in the ratio of 3 to 1.

The largest group sought treatment three to six months from the beginning of symptoms.

The aetiology was an extrinsic trauma in 20 per cent and an intrinsic trauma in 80 per cent with a gradual onset of symptoms in 63 per cent and a sudden onset in 37 per cent.

Overclosure accounted for 30 per cent, malocclusion of various sorts, 58 per cent.

Clicking occurred in 56 per cent. The remainder, with a few exceptions, had various symptoms of pain in the immediate region of the joint or of reflex pain, or of interference with the free movement of the mandible.

Ear symptoms were extremely rare, and this series gives little or no support for Costen's syndrome.

The disc is closely conformed to and normally moves with the condyle.

The disc is not fibro-cartilage, but composed of closely interwoven bundles of collagen fibres and is probably capable of repair.

The blood and nerve supply can be

traced as far as the periphery of the disc.

The loose tissue connecting the disc to the posterior wall of the capsule contains elastic fibres and is extremely vascular.

The articular tubercle and head of the condyle are covered with a special collagenous layer. The apex and posterior wall of the glenoid fossa have no special covering and are non-weight bearing.

The great majority of the cases were treated conservatively. In only 14 per cent was it necessary to explore the joint.

A cure can be claimed in 72 per cent, a marked improvement in 20 per cent, and failure in 8 per cent out of the 125 cases completed.

Prevention is better than cure.

Statistical and Morphological Analysis of Four Hundred and One Cases of Intraoral Squamous Cell Carcinoma.

by RICHARD W TIECKE, D.D.S., M.S., and JOSEPH L. BERNIER, D.D.S., M.S., Washington, D.C.

Journal of the American Dental Association, December 1954.

Four hundred and one cases of intraoral squamous cell carcinoma were analyzed with respect to the clinical characteristics and microscopic findings. Particular emphasis was placed on the primary site of the lesion, degree of malignancy, survival rates and size of lesion.

1. The site of origin for over one half (52 per cent) of the carcinomas was the tongue. Other sites in order of descending frequency were the floor of the mouth, alveolar mucosa, palate and buccal mucosa.

2. Patients with carcinoma of the tongue represented a younger age group, had lymph node involvement or metastasis more frequently or extension or both, and a lower three year survival rate than patients with lesions in other intraoral locations.

3. The two-year survival rate for patients with lesions of 1 cm. or less was 42 per cent as compared to the 28 per cent for patients with lesions of 3.6 through 8 cm.

4. Patients with intraoral squamous cell carcinoma who had serologic evidence of syphilis at the time of admission had a poorer chance for survival than those with no history of syphilis.

5. On the average the patients in the initially correct diagnosis group waited 4.2 months after onset of symptoms before seeking professional aid; this group received treatment for cancer within four weeks. In contrast, the patients whose lesions were initially diagnosed incorrectly sought treatment within 2.6 months; however, diagnosis and treatment for cancer were delayed for 4.7 months.

6. The survival rates computed in relation to type of treatment indicated that with surgery (conservative, radical or both) 53 patients out of 100 would be expected to live two years or more. This is considerably higher than the survival rates for those treated by radiation.

7. The survival rate for 372 patients with a known interval following hospitalization indicates that 34 per cent might be

expected to live 2 years or more; 25 per cent, 3 years; 24 per cent, 4 years, and 21 per cent 5 years or more.

8. Prognosis for survival of patients with lesions having lymph node involvement for the 2 year period was 16 patients out of 100; for the 3 year period 9 out of 100, as compared to 53 and 42 patients whose lesions did not involve lymph nodes.

9. Two year survival rates in relation to degree of malignancy indicate that only

8 out of 100 patients with tumors having Broders' Grade IV classification are expected to survive.

10. The initial diagnosis was incorrect for 38 of the 256 patients with intraoral carcinoma. These 38 showed 24 per cent fewer survivals than the 218 cases in which the initial diagnosis was correct.

11. On the basis of the findings here the use of tobacco cannot be indicated nor can it be ruled out as an etiologic factor.

Cardiovascular Disease as it Affects Dentistry.

by CLARENCE DENTON, M.D.

Journal of Dental Medicine, October 1954.

Every dental procedure, just as every medical or surgical procedure carries some definite risk, however small, to the well-being of the patient. The object of a good dentist will be to keep this risk as small as possible. Certain forms of heart disease, particularly in certain stages, increase this risk, and it is this aspect of cardiovascular disease which is of interest to the dentist.

The problems facing a dentist consist of finding out if the patient has any organic disease, then recognizing the particular aspects which are of concern to him, and then knowing what to do about these aspects. The dentist cannot be expected to decide on the presence or absence of heart disease or to diagnose its nature. He can however, with a few simple questions, ascertain if the patient knows that he has heart disease, and often what kind. Except in the most unusual circumstances, it should then be possible for him to obtain information from a physician as to the patient's cardiac diagnosis and the extent of the disability. This can be done by calling the patient's physician if he has seen him in the previous six months,

or by asking him to visit his physician if this is not the case.

All forms of heart disease may result in the occurrence of an arrhythmia or congestive failure. The dentist should know what factors, that he can control, are likely to cause or exacerbate these problems. Coronary artery disease, in addition to these problems, includes the added risk of precipitation of angina or a coronary thrombosis by certain actions or agents employed by the dentist. Rheumatic and congenital heart disease are both associated with the special problem of subacute bacterial endocarditis, a condition about which the dentist also has it in his power to do something. In certain cases of either rheumatic or arteriosclerotic heart disease, long-term use is made of the anticoagulants. It is incumbent upon the dentist to know if such a patient is in his hands.

Having determined the existence of cardiac disease and its nature, having recognized the special facets which are of interest to him, the oral physician must know how to employ anaesthetic and analgesic and antibiotic agents, so as to minimize anxiety, pain, hypoxia, the duration of the procedure, blood pressure changes, bleeding, infection and arrhythmias. In short, he must know how to perform his dental work so as to prevent or avoid the problems placed before him by the patient with heart disease.

The Convention - 1955

The annual event of greatest interest to the dentists of Canada in their professional life is undoubtedly the national convention. In 1950 The Ontario Dental Association was host to Canadian dentists at the gathering in Toronto. Since that time, the Annual Meeting has traveled to Ottawa in 1951 where the Eastern Ontario Dental Association acted as host, thence to the city of Vancouver with the British Columbia Dental Association to celebrate the Golden Jubilee of the Canadian Dental Association in 1952. The Convention returned east to Canada's metropolis in 1953 and there the Montreal Dental Club had developed a meeting in which the members of the Canadian Dental Association were included.

St. Andrews-by-the-Sea was the beautiful east coast setting at which the New Brunswick Dental Society in the fall of 1954 arranged for such a splendid assemblage of the members of the Canadian Dental profession. We are now returning to Toronto because for this year The Ontario Dental Association has graciously extended an invitation to the Canadian Dental Association to meet conjointly in Toronto from May 15th to 18th, 1955. This invitation was accepted and during the past many months the various organizational details have been receiving the earnest consideration of the Joint Convention Committee. It is indicative of the complexities involved in the development of a convention that the activities of those accepting committee responsibilities must begin even before the previous meeting is held.

Our Convention Committee this year has striven to develop a meeting which will be of interest to all those attending. The scientific sessions are well balanced with social and recreational affairs. The ladies too have not been forgotten, and an interesting programme has been prepared for their enjoyment.

The complete convention programme will be published in a special Convention Issue next month, a procedure which is a departure from previous years. Each reader, therefore, will be able to view the proceedings in their entirety two months prior to the opening day. By this method, it is hoped that many dentists will be able to ascertain the excellence of the programme and make the necessary arrangements in their practices to permit attendance at the meeting.

Prior to the actual convention, the annual meeting of the Board of Governors of the Canadian Dental Association will be held from Wednesday, May 11th to Saturday, May 14th, in the same hotel, the Royal York. This meeting, of course, is attended by the Officers of the Association, the Board of Governors, and the Chairmen of Committees. It is, however, most desirable that as many members as possible, take it upon themselves to attend at least some of the sessions of the Board. Each member is entitled and is in fact urged to be present at these meetings.

It does not take a very perspicacious individual to realize that the dental profession in Canada is beset by many problems and by many forces. Dentists on the east coast have had to contend with pres-

sure to license improperly trained personnel and deal with technicians desirous of providing prostheses directly to patients. In the Prairies, outside individuals are attempting to inaugurate a dental nurse scheme to provide a form of treatment for children. The technician problem continues to be a vital issue to the profession in the far west.

The Canadian Dental Association has been active in attempting to serve the best needs of the people and consequently the profession in dealing with these matters. And, one can see that a unified profession, with a unified policy, is much better able to cope with these trying situations.

Unity, however, does not mean uniformity. It is through a pooling of thoughts and ideas, that policies and programmes are developed which best meet the needs of the profession and its patients. The Board of Governors' Meeting offers an ideal medium for such deliberations.

It is almost invariably true, that no destructive criticism emanates from those who attend the Board sessions and serve on Reference Committees. Constructive criticism is the order of the day. Sometimes it is difficult not to liken destruc-

tively critical individuals to the blind men in the fable who attempted, in vain, to describe an elephant after one had touched only its ear, another only its trunk, and the last only its leg. Many are prone to develop their own theories to rectify the enigmatic situations in which the profession finds itself without first becoming aware of all the considerations which may have a bearing upon an ultimate solution.

Parochialism has no place in our Canadian dental picture. A judgment unfavorable to the profession in the west would surely have its tentacles extend to the east. A provincial enactment in the east contrary to the best interest of dentistry could well become manifest in similar rulings on the other side of the country. The dental profession in Canada is too small in number to allow petty local differences to divide it in important national issues.

The policies enacted through the deliberations at the Board of Governors' Meeting are of vital concern to Canadian dentists. Each may have a part in the development of those policies by sharing in the Board of Governors' Meeting and further may come to know and better understand dentists in other parts of our great land by attending the Convention.

Book Reviews

A Guide to Hospital Building in Ontario—

Prepared by the Committee on Designing, constructing and equipping of public hospitals in Ontario and printed by the authority of the Hon. Mackinnon Phillips, M.D., C.M., Minister of Health for Ontario.

This book comprising some 300 pages was prepared at the request of the Government of Ontario so that there might be uniformity in the construction or alteration of hospitals in the Province of Ontario.

All departments are thoroughly broken down into their component parts and reconstructed on a basis of, 50, 100, 200, 500, 900 and 1200 bed

hospitals. Architectural plans are provided for each department.

A chapter on the dental department was prepared by the Hospital Dental Services Committee of the C.D.A. The physical construction of the department has been simply explained for the various size hospitals and architectural plans are provided.

This book will find widespread use throughout the country and is highly recommended for use wherever a new hospital is to be constructed or hospital renovated. The Hospital Dental Services Committee is proud to have had the honour of contributing to this excellent guide.

This reference text is available through the Library Service of the Association.

Douglas Tanner

Oral Cancer by J. Roy Bourgoyne. Published by the Macmillan Company of Canada Ltd. Pages 295. Price \$6.50.

This book appears to consist largely of a series of extracts from the work of others. There is little to suggest that the author is interpreting his material in the light of an extensive personal experience. Thus, while the book quotes many opinions, it reaches few conclusions; the reader is introduced to many ideas, but he is left with few definite concepts about the nature of the disease or its management.

The subject matter suffers from a lack of organization. This is apparent not only in the arrangement by chapters of the major topics, but to an even greater extent in the presentation of the material comprising the various sections. Indeed the only two chapters which are presented in a straightforward logical style are "Radiation Therapy in the Treatment of Cancer" contributed by Dr. David S. Carroll and "Maxillofacial Prosthetics in Patients with Cancer" by Dr. Ralph S. Lloyd. The confusion resulting from lack of organization is compounded by the inclusion of many redundant words, phrases, and sentences, and much irrelevant material, and further by frequent repetition of various sections of the work in slightly paraphrased forms. Amongst the irrelevant material is the lengthy opening discussion in Chapter III concerning the layout of the dentist's office, the appearance of the dentist, the discussion of pain, and of "psychology". And, surely, the information on pages 48-50 about examination of the teeth is out of place in this book,—does it not belong in other more elementary textbooks of dentistry? Much of the section on "Swellings Pertinent to the Oral Cavity", on pages 54-59 is superfluous, while the whole of Chapter X on "Diet for Cancer Patients", seems unnecessary and ill advised. Both chapters IV and V give practically the same classification of tumours, with almost identical short notes on the various types. The points of contrast between benign and malignant tumours are set forth in tabular form on page 64, repeated in four paragraphs on page 92, and again in two large paragraphs on page 240! Many such instances of repetition could be cited.

This book gives a very incomplete account of the subject of "oral cancer". There is no clear description of the pathological characteristics of the various types of oral cancer and their

natural history, nor is there given any clear presentation of the methods of treating such lesions. The question of mortality rates and survival figures is not even discussed.

There are, throughout the book, a great number of extraordinary statements, many mutually contradictory statements, and a considerable number of misstatements. A few examples are quoted:

- Page 54 "Swelling may be the result of trauma to the tissues followed by a response to injury; or pathology, that is, the tissue response following injury of tissues by bacteria, viruses, or their toxins, or neoplastic growths."
- Page 59 "Hemangiomas are tumours made up of blood vessels and seem to have an unlimited blood supply."
- Page 62 "Cancer is a deadly creeping, self-assured disease."
- Page 70, in reference to carcinoma of the floor of the mouth, "The etiology of this cancer is more obscure than for any other type since the area is protected by the tongue and there is a constant stream of saliva in the region to keep it clean."
- Page 73, referring to "neurogenic fibromas", "As there is gradual transition from the benign to the most malignant forms, the benign tumours should receive radical treatment."
- Page 73, in relation to "chondromas", "The growing cells are not in the centre, but in the periphery of the tumour and thus in their progressive growth they are in a position to infiltrate and become malignant."
- Page 75, "Chondrosarcomas resemble the benign cartilaginous tumours called chondromas but tend toward malignancy."
- Page 76, "Lymphosarcoma is usually found in people of the approximate age of forty-five."
- Page 76, referring to "mixed tumours",—"Metastasis is very low, being about 25%. . . . Occurrence is usually in the young age group but because of the slow interosseous development they may be present for years before the host discovers their presence."
- Page 76, re "teratoma",—"The unfertilized cells of the ovary and testicle are thought to be the predisposing cause of the tumour."
- Page 116 "At this particular stage, stage III, conservation of malignant tissues and adjacent tissues contaminated is tossed overboard." (!!)
- Page 117 "Adenocarcinoma of the stomach spreads by direct extension through the mesentery, limiting the movement of the intestines, causing stasis and peritonitis."
- Page 121 "It was observed that metastases from osteogenic sarcoma may come from bone." (!!!)
- Page 124 "Leukoplakia is second to teeth in the etiology of mouth cancer."
- Page 148 "It is concluded from the foregoing, that in dealing with cancer of the salivary glands, we are dealing with a complex type of malignancy that does not always show its true picture by histological or clinical examination and that, in the final analysis, the real criteria for its malignancy are the course it ran and the damage done."
- Page 174 "Anemia is often a usual thing with cancer."
- Page 233 "Concerning the belief that cancer cannot be cured, let us suffice to say that 80% of the cancer cases are curable if the treatment is instituted in early stages." (!!!)
- Page 238 "The usual cancerous ulcer of the mouth is coarsely glandular and . . ."

Page 239 "Any mouth cancer may result from an ulcer that does not heal in two weeks under conservative treatment."

Page 239 "... since all benign tumours are potentially malignant, ..."

Page 241 "Mouth tumours rarely form remote or secondary tumours except in the terminal stages."

The major theme of this book seems to be that cancer is a serious disease ("second only to heart disease") for which "early diagnosis" is the panacea. This "message" is repeated ad nauseam in profound statements such as the following one found on page 78, "With the ever increasing number of cases of neoplastic growths confronting the population of the universe, it behooves all engaged in the practice of healing arts to become more cognizant of the profound incipency of this deadly menace."

The literary style of this work defies descrip-

tion. The rules of English composition are freely contravened. One word is never used where four or five can be employed with almost equal clarity. The result is sometimes a little confusing, e.g. page 157, "There may be an indulgence as far as possible for the longings for special articles of the diet as long as it is not too frequent because the gratifying of these desires has often a very comforting effect on the patient's general condition." and page 164, "A surgical liquid diet is one which is adequate when strictly concerning nutrition, but plays an important role in replacing the fluids which have or might have been lost due to the operation."

In its present form this book can scarcely be recommended.

R. A. Mustard.

The Library

Additions

FINK, D. E.: Release from nervous tension. 1953. 268p.

JACOBSON, E.: You must relax. 1948. 282p. illus.

JENKINS, G. N.: The physiology of the mouth. 1954. 288p. illus.

MORLEY, M. E.: Cleft palate. 1954. 173p. illus.

OLIVER, O. A., and OLIVER, W. H., editors: Orthodontics Directory of the World. 17th ed. 1954. (For reference only)

OSBORNE, J., and LAMMIE, G. A.: Partial dentures. 1954. 374p. illus.

THOMA, K. H.: Oral pathology. 1954. 1536p. illus.

WHEELER, R. C.: Tooth form drawing and carving. 2nd ed. 1954. 106 p. illus.

The Corps

Lt.-Col. W. M. Sinclair has received high commendation from the deputy commander of American forces in Korea.

The commendation, read at the formal opening of the newly-built schoolhouse in Hwasan-Dong, said "The enthusiasm, sincerity and perseverance, which Lt.-Col. Sinclair devoted to the rehabilitation of Korean settlement villages in the area of the 1st Commonwealth Division are worthy of the highest commendation. He deliberately extended his service in Korea so that the Hwasan-Dong school would be completed.

"Then, through his vigorous leadership and with the fullest cooperation of his associates, he succeeded in completing a fine three-room school in 27 days. This established an enviable record for speed and quality of construction among all rehabilitation projects undertaken in the area of the 1st U.S. Corps.

"Lt.-Col. Sinclair's efforts have been reflected in the affection he and the officers and men of the division have inspired in the hearts of the Korean farmers who were so generously assisted in re-establishing their war devastated villages. His was an outstanding contribution to the furthering of good will between the people of Korea, and soldiers of United Nations Command."

Major R. H. G. Cunningham has recently returned from Washington where he attended an advanced course in dentistry at the Army Medical Service Graduate School, Walter Reed Army Medical Center.

No. 25 Canadian Field Dental Unit which saw service in Korea has been reduced to nil strength. Two dental officers, Captain W. H. Harrington and Captain D. H. Skinner, are still serving with the remaining element of the Canadian forces in the Far East.

Committees and Councils

Dental Public Health

We are pleased to report that the pamphlet "How to Brush Your Teeth", prepared by Dr. Glenn Mitton and Miss Andrea Hebert, has been published. It has received a very enthusiastic reception and there has been a greater demand for this pamphlet by the profession at large than any other previous pamphlet published by the Canadian Dental Association.

The pamphlet "Facts" on fluoridation prepared by Dr. F. McCombie was also published. It has supplied a long wanted need for a treatise on fluoridation for lay consumption. This pamphlet also has been in demand, over 20,000 copies being sold just as soon as it came off the press.

Letters were sent to all the provinces requesting them to take advantage of National Health Week and try and arrange suitable programs in each province. This year the National Health Organization is stressing the importance of fluoridation during this week, and the magazine is carrying an article on this subject. We are hoping it may be possible to have a coast to coast broadcast in the form of a panel discussion on fluoridation.

From the number of different articles we receive from the clipping service it proves that dental health is getting quite a lot of publicity throughout the country, and bringing to the public's attention the importance of dental health.

There is now available at National Headquarters a series of 30 articles on dental health which any society or organization will find very helpful for radio addresses, public addresses, or for the newspaper. These articles are all written in lay language for public consumption.

A survey of the dental health taught in the schools of the provinces of Canada was conducted during the last year. The response from all the provinces on the questionnaire submitted was excellent, and this committee would like to express their appreciation for the splendid co-operation received.

From the results of the survey it would appear that the children of all the provinces are receiving a good education in dental health. Such, however is not always the case.

When the curricula of the provinces are analysed the time allotted for health studies, which includes all its branches and physical training, there is little time left for dental health teaching.

It would appear in a number of cases that the teacher's training in dental health is not adequate.

In districts where public health dentists and school dentists engage in dental health education there is a decided difference in the children's knowledge of oral health and its application.

It would appear that the actual teaching of dental health is inadequate although the facilities provided according to the curricula seem adequate.

Your committee would like to recommend the following suggestions to the Board of Governors:

That the Canadian Dental Association advise the Canadian Educational Association that they would like to stimulate in the child pride of having good teeth from the standpoint of good personal appearance and health. They would also like to recommend a list of books and pamphlets acceptable to the Canadian Dental Association.

(b) Where possible, information on dental health be given to parent-teacher associations and similar organizations.

(c) When possible, information on dental health be given to the teachers at summer schools, normal schools, and also to the teachers in the schools.

Each province has its own Dental Health Program, which varies in the different provinces but all programs are increasing yearly. Alberta and Newfoundland are the only provinces now without a Director of Dental Services.

Arthur Poyntz, *Chairman*

Economic Security

"Participating" vs. "Non-Participating" Contracts

by E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.,

Consulting Economist and Administrator
of the C.D.A. Plan.

The question often is asked, "Is it not more profitable to me to purchase 'participating' insurance, and thus enjoy 'dividends' from the Company?" It always seems a good thing to have "dividends" coming in—so why not? The first point we discover is that the Department of National Revenue does not require them to be declared on Income Tax Returns.

Why? Because "dividends" on an insurance policy do not represent a sharing in the profits of the company as a business enterprise, but merely a return of excess premiums charged when the "mortality experience"—see Article I in January, 1954 issue—warrants this.

The practice arose as a safety margin for the company: After determining as

closely as possible probable mortality, the actuary added an additional charge for unforeseen contingencies, in effect agreeing to return at least part of the excess charge if the contingencies did not arise. In effect, the policyholder is invited to "participate" in the fortunes of the company—or the misfortune.

This system should result, in favourable circumstances, in reduction of the net cost of this "participating" assurance, to a figure appreciably better than that of "non-participating" assurance, since the "non-par" holder has his values and premiums fully guaranteed and shares none of the company's risk as does the "participating" policyholder.

The following Table compares the "participating" and "non-participating" policies of ten leading companies. The premium rates are the published rates of the companies per \$1000.00 of Whole Life Assurance, in the class usually designated "preferred"—i.e., the minimum policy actually purchaseable is \$5000.00:

Company	"Par"	"Non-Par"	Total "Dividends" in 20 years	Excess Cost of "Par" Over "Non-Par" in 20 years
A	22.34	19.15	61.03	63.80
B	21.57	18.89	56.08	53.60
C	22.36	18.73	91.31	72.60
D	22.05	18.15	82.19	78.00
E	23.37	18.17	73.17	104.00
F	24.21	17.65	106.40	131.20
G	21.09	18.18	66.03	58.20
H	27.96	18.60	62.96	187.20
I	24.90	18.47	129.39	128.60
J	28.15	19.90	168.80	165.00
Best Whole Life "non-par" —	\$17.15	per \$1000.00: Total Cost 20 yrs....		\$343.00
Best "Par" ("C" above)	22.36			447.30
		Dividends		91.31
		Net Cost of "C"		355.89

The "dividends" are those claimed by the respective companies in their published statements of actual payments for this class of policy over the last twenty years, or their own projections of present divi-

dend rates as published in "Stone and Cox Insurance Tables."

The "excess cost" is the extra cost of the "par" contract over twenty years.

It will be observed that even in the best

case the gain is small (93c per year) considering the period over which it is accumulated, and the risk of another result. In eight of the ten cases, the gain is almost non-existent, or an actual loss.

The conclusion must be, therefore, that participating policies are not desirable in comparison with non-participating policies, even of the same company.

But in comparison with the best "non-participating" Whole Life rate which has

come to attention (not listed above), it will be observed that the best dividends will not equal the excess cost of the "participating" contract:

It has been said that "The application of science to modern business is towards the elimination of chance." If this be true, the "non-participating" contract with all values guaranteed, is the most advantageous and wisest for the insurance purchaser.

The Provinces

Alberta

The December meeting of the **Lethbridge and District Dental Society** was held December 6 at the El Rancho Banquet Room. Following the dinner and business meeting two clinics were presented. Dr. Van Christou talked on the value of Topical Application of Sodium Fluoride and Dr. R. B. Burgman gave an excellent review of the Endodontic course he took last fall in Seattle. Both clinics were very well received. Besides local dentists, Drs. D. A. R. Burgman and E. C. V. Bryant were present from The Pas. D. A. R.

On Monday, December 13, members of the **Edmonton and District Dental Society** met at the University of Alberta for presentation of the first lecture from the University of Illinois, College of Dentistry, Telephone Extension Program for 1954-1955.

The subject under discussion was "Emergency Problems in Dental Practice" and this was presented by means of coordinated slides and tape recording.

The last regular meeting of the **Peace River District Dental Society** was held in Peace River, December 8, 1954. Drs. B. Boyko and Y. Iwasaki were hosts to the Peace River dentists and their wives.

Dr. J. Zimmerman, President of the Alberta Dental Association, and Dr. R. R. McIntyre, Alberta Representative of the Canadian Dental Association were guest speakers.

Following the meeting the group enjoyed a fine banquet and party at the Victory Hotel.

The Peace River boys are to be congratulated, they even had a "baby-sitter" hired for the occasion, as well as a cocktail party for the ladies. C. M. C.

Honorable Ernest C. Manning, Premier of Alberta, was the guest speaker at the regular monthly supper meeting of the **Edmonton and District Dental Society**.

Premier Manning spoke to the members of the society on the legislative and executive aspects of government. In his address he suggested that more active participation in the duties of government by men of professional calibre would be of service to the country.

A large representation from the Calgary society, led by President R. L. Rasmussen was in attendance for the meeting. This visit from our colleagues to the south was well appreciated by members of the local society.

Dr. J. Zimmerman, president of the Alberta Dental Association, presented a well received report on the status of Dentistry in Alberta as at the present time and with consideration for the future. J. M. S.

Dr. George Brass, professor of operative dentistry at the University of Alberta, was guest speaker at the December meeting of the **Central Alberta Dental Association**. The president, Dr. Lorne Oatway presided.

Newfoundland

The **Newfoundland Dental Society** has had a busy fall session with monthly meetings held, during which much reorganization and future planning was carried out.

Amongst other prominent features, arising out of tense meetings, it was decided to include the dental officers from Pepperell Air Force Base, here in St. John's, in these monthly meetings, and then attempt to work out a clinical program for each meeting.

This has met with great success, and on December 1 the Pepperell dental officers were hosts to the Newfoundland Dental Society at the second of these Joint City-Base Meetings.

Highlight of the evening was a paper given by Major Wm. R. Hutchinson Jr. and Base Dental Surgeon. Colour slides were also shown.

The Society members were then taken on a tour of the Base Dental Clinic, and a thoroughly interesting and appreciative evening was enjoyed by all.

Arrangements are now being finalized for the Annual Meeting in St. John's, January 31 to February 2, 1955, and this promises to be the most interesting annual event of the Society ever planned.

Quebec

Montreal Endodontia Society

At the well attended December meeting, Dr. Paul Dionne of Joliette, Quebec, gave an account of his experiences with an electrical apparatus in endodontic treatment.

This apparatus is called the "Ionophoresis—Integrator and Diadynamo Therapy Applicator". It was developed by Dr. Pierre Bernard of Paris, and Dr. Dionne has been using it with good results for one year. At the request of the Montreal Endodontia Study Club he consented to come and tell the members about the apparatus and its mode of application. He also showed roentgenographs of many endodontia cases which had responded successfully to one treatment by Ionophoresis. All of these cases showed very rapid calcification of any radiolucency at the apex. The condition after six weeks usually was comparable to the average case eight to twelve months after conventional medicament therapy.

The filling material used by Dr. Dionne, "Radiocalex" is a mixture of Calcium Hydroxide, glycogen and metallic silver. For improved Radiopacity he reinforces this with Gutta Percha points.

To complete the treatment Dr. Dionne applies Diadynamic Therapy which is also available from Dr. Bernard's apparatus. This should be applied on the first, third and fifth day after Ionophoresis and filling of the canals. This also can be repeated after ten days if necessary.

This "sinusoidal current" which is applied by means of a moist sponge electrode over the tooth apparently aids the respirative processes of the tissue and this augments the reparative processes.

Dr. Dionne did not want to pose as a specialist in endodontia, but rather as a

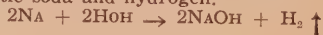
general practitioner who has been getting very good results with comparative ease through the use of Dr. Bernard's apparatus.

The mode of action of the Ionophoresis treatment is as follows:

1. Rubber dam placement is optional.
2. Culturing the canal's content is optional.
3. Tooth is opened in usual manner and canals filed, measured and cleansed in the usual manner using saline as a flushing agent.
4. Negative electrode (barbed broach) is moved progressively through the moist pulp chamber and into moist canals to or just short of the apex . . . three to five minute duration.
5. Canals are filled with radiocalex and gutta percha.

The electrochemical reaction is the means by which the canals are sterilized. OH- ions are released and repelled towards the apex. They are very active. They result in the lysis of protein and saponification of fatty acids. This breaks down the bacteria and the organic contents of the canals. The OH- ions also decalcify very slightly the walls of the canals so that there is in effect an electro chemical opening as well as an electro chemical sterilization and cleansing. This last is aided by nascent H_2 which is also released and bubbles out of the tooth slightly, regurgitating the lysed debris.

When the negative electrode comes in contact with NaCl, which is in the tissue fluid in the canals, it breaks it down. Cl- is repelled apically and Na+ is attracted to the negative electrode where it loses its positive charge and becomes atomic sodium. This reacts immediately with water to form caustic soda and hydrogen.



The hydrogen bubbles off and the NaOH is then broken down to form OH- ions which are repelled apically and the Na is again attracted to the electrode where the process is repeated.

Dr. Dionne stressed that he had come upon some problems but that the majority of the treatments were straight-forward.

He found that he could treat multi-rooted teeth and also that he could treat two adjacent teeth at the same sitting if the lesion involved both apices.

He also found that if any vital tissue remained in the canals that he had to remove this under local anaesthesia and then proceed with treatment to avoid discomfort.

He found that persistent fistulas would heal more quickly if they were treated by inserting a positive copper electrode a few mm. into the opening.

Also broken instruments usually (broaches) did not negate treatment. As a matter of fact the treatment is effected as normally and the instrument has a tendency to loosen and can then be removed.

He found that if the canal content is alkaline, the ionophoresis was quite painful. These cases must be treated with H⁺ ions and then later by OH⁻ ions. Canal content is usually alkaline in the absence of infection, ex. non-vital due to trauma.

The lecture was well received by the club members and their guests and it stimulated many questions among the group. It was felt by most that they would like to hear more on this subject.

Dr. Dionne was thanked by Dr. Robert Weiner on behalf of the club.

It is understood that Dr. Dionne is preparing a manuscript for publication at an early date.

Dr. Tremblay reported that Dr. Dorion's survey of radiographs was progressing.

The study club is endeavoring to collect a large number of radiographs of any completed endodontic cases and study the results of endodontia. Readers are invited to send radiographs of any completed cases to Dr. E. S. Dorion, Sun Life Building, Montreal, P.Q. The only information which need accompany the films is the approximate date that the canal was filled. Films will be returned to sender after examination.

—G.M.D.

The annual Ladies' Night of the **Mount Royal Dental Society** was held in the form of a dinner dance at the Sheraton-Mount Royal Hotel on Saturday, November 27th. Dr. Isidore Hyams presided at the dinner, which was arranged cabaret style.

Dr. Harry Rosen offered the toast to the Queen, and Dr. Sidney Silver toasted the ladies, paying tribute to their wifely qualities. The reply on behalf of the ladies was given by Mrs. Isidore Hyams in verse form and was warmly received. Dr. Louis Eidinger offered a toast to the University of Montreal. Dr. Eidinger paid tribute to the cooperation given the Society in its early years by the universities. This support has continued until the present time, and is truly appreciated by all the membership.

Invited guests of the Society were Dear and Mrs. D. P. Mowry, and Dean and Mrs. E. Charron. It was regretted that Mrs. Charron was unable to attend due to illness, and Dr. Isidore Hyams, expressing the sentiments of the gathering, wished her a speedy recovery. Dr. Charron and Dr. Mowry replied to Dr. Eidinger's toast and brought greetings from their respective Universities.

Entertainment and dancing brought the evening to a close. Dr. Leon Lang, chairman of the Entertainment Committee, and his co-workers, earned the appreciation of the Society for arranging a social event that was enjoyed to the full by all present.

A.J.C.

The November 19th all day meeting of the **Mount Royal Dental Society** was held at the Mount Royal Hotel. The highlight of the program was an address by Dr. Bregstein who presented a paper in which he discussed such topics as patient personality, the importance of an early evaluation of attitudes, the ideal patient and how to produce him. He also listed in detail the reasons why a patient may object, as well as the various types of patients, for example, the timid soul, the complainer, the detective type, the interrogator, the loquacious type, the suspicious type. Dr. Bergstein carefully discussed several ways to cope with objections, and followed that by a tour on the planning of the patient's prescription.

During the afternoon session he presented a series of excellent slides followed by an informal discussion on the management of typical problems which the average practitioner might be confronted with in his office. This portion of the program was made especially interesting by Dr. Bregstein's unique use of a tape recorder.

The address was greatly enjoyed by all the members and guests present.

H.R.

A meeting of the **Mount Royal Dental Society** was held on Tuesday evening, December 7th, 1954 at the Sheraton-Mount Royal Hotel, Dr. I. B. Hyams presiding. The guest speaker was Dr. D. L. Thomson, Dean of the Faculty of Graduate Studies and Professor of Biochemistry at McGill University. Dean Thomson's topic was "Dental Research in Canada."

Dr. Thomson served on the National Research Council's Associate Committee or Dental Research for eight years. This committee was set up to encourage dental research in Canada, for which there is a great need. Dr. Thomson pointed out that dental research has not attracted the non-dental research worker as the medical field had gained personnel from outside its own ranks. Secondly, fewer dental practitioners devote themselves to research than do medical practitioners.

The Council allows grants in aid of dental research and also provides fellowships in the basic sciences to train research personnel from the dental field. Over the years some valuable contributions to dental knowledge have been sponsored by these grants.

Dr. Thomson described the findings at the University of Toronto that lactobacillus acidophilus is not the sole producer of lactic acid in the mouth. Further, there is no correlation between the lactobacillus counts and the presence of ammonium ions in the saliva. It would therefore seem that ammoniated dentifrices would have no special value.

The methods developed by Dr. G. Nikiforuk of Toronto and Dr. A. G. Racey of McGill to improve the preparation of teeth for microscopic sections were supported by the Council. The work of Dr. C. P. Leblond of McGill with radio-active isotopes led to new knowledge on calcium and phosphorous deposition and indicated the possibility that the mineral elements of the teeth are derived from dentine and that ameloblasts provide the organic matrix.

Dr. Thomson also mentioned work sponsored by the Associate Committee on Dental Research that evaluated the toxicity of local and topical anaesthetics, determined the fluorine content of foods, and studied the pattern of eruption of the deciduous teeth as related to later malocclusion.

Dr. E. Charron, Dean of the Faculty of Dentistry at the University of Montreal was an invited guest of the Society and added a few words to those of Dean Thomson on the problem of stimulating dental research in Canada.

After an interesting discussion, the speaker was thanked by Dr. A. W. Bazerman on behalf of the Society.

A.J.C.

The Montreal Alumni Chapter of the **Alpha Omega Fraternity** conducted an all day Seminar on Friday, Dec. 3, 1954 in the Amphitheatre of the Faculty of Dentistry, University of Montreal. The subject of the presentation was titled: A symposium on the Hazards of the Dental Practitioner.

The essayists in the morning session were J. GORDON PETRIE, M.D., Chief Orthopaedic Surgeon, The Royal Victoria Hospital, and AUBIE L. ISSENMAN, M.D., Chief of Service, Dep't. of Ophthalmology, The Jewish General Hospital. The afternoon essayists were: LEMUEL P. EREAUX, M.D., Dermatologist in Charge, The Royal Victoria Hospital, and HAROLD N. SEGAL, M.D., Chief of Cardiology, The Jewish General Hospital.

Announcement is also made from the office of the secretary of **The Montreal Dental Club** that the Annual Winter Outing will this year be a mixed affair and will be held at the Alpine Inn, Ste Marguerite, P.Q., the week-end of February 11 to 13. Dr. C. C. Bourne is in charge.

The Montreal Dental Club held its Annual Oyster Party recently at the R.C.A.M.C.-R.C.D.C. Mess. Never have so many oysters disappeared so quickly by the assembled members. The queue became so long, however, that some of the group gave up watching and waiting their turns that they took it upon themselves to wield those trusty little blades in an attempt to crack open a few. Leading the field both in efficiency and adeptness were the Oral Surgery specialists.

After the oysters were disposed of the group gathered around some very fine colored movies of the big Kitimat development; it proved to be an awe inspiring sight. This closed the evening's entertainment and everybody went home hungry for a good steak.

P.J.L.

Dr. H. T. Oliver, Secretary of **The Montreal Dental Club** has announced that the Club will again subscribe to the Telephone Extension Course, the first meeting being held on January 11th, 1955; he also noted that the Club will assume the entire cost of the course this year.

Of interest is that a new procedure will be used this year—that of showing a film strip along with a tape recording of the presentation, which are five in number.

New Brunswick

Dr. Reginald F. Sansom was elected president of the **Saint John Dental Society** succeeding Dr. Hugh F. Bonnell.

Other officers named at a meeting in the Admiralty Beatty Hotel were: Vice-President, Dr. E. D. Halford; treasurer, Dr. J. G. Blackmer; secretary, Dr. A. Steurman; directors, Dr. Bonnell, Dr. Howard W. MacDonald and Dr. A. J. Coughlan.

The Society heard a talk on the Canadian Dental Association Blue Cross Plan, which the entire association now embraces. Dr. J. McDonald a member of the association, delivered the address.

Dr. John F. Edgecombe presented two films on loan from the Royal Canadian Dental Corps.

Manitoba

The City Council of Brandon unanimously passed a resolution calling for the addition of a fluoride to the water supply. Dr. Stuart Schultz, chairman of the Health Committee, devoted three years of effort to this campaign.

British Columbia

The **Victoria and District Dental Society** met in the Empress Hotel in November to hear a panel discuss a list of questions relating to organized dentistry in Canada. The panel, composed of Drs. H. R. Turner, Arthur Poyntz and Charles Usher, provided a discussion which was well received and informative.

During the National Health Week (January 31-February 5) the Society will publicize dental health by appointing suitable speakers and arranging for the placement of posters.

A no-host party took place in December at the Empress Hotel in lieu of the regular monthly meeting.

For several years the **B. C. Dental Association** has been interested in post-payment plans for dental services. Dr. Lloyd Chapman, who was appointed to investigate the matter, reported to the Executive that after exhaustive study he found that there are two types of organizations who deal with post-payment plans:

1. Finance companies which charge 20% to 30% per year, one-third paid by the dentist and two-thirds by the patient.
2. Banks which charge 12% to 15% per year, one-third paid by the dentist and two thirds by the patient.

In Canada the banks are not at all interested, as they may not charge more than 6% per annum. Consequently it was recommended that the association leave post-payment plans alone until the banks are permitted by law to handle this type of business.

Dr. James Foulks, Professor of Pharmacology at the University of British Columbia, gave the afternoon address at the December meeting of the **Vancouver and District Dental Society**. His subject was "Local Anaesthetics".

The evening speaker after dinner was Dr. Horace Graves, Associate Professor of Surgery at U.B.C., and Director of Anaesthesia, Vancouver General Hospital. His lecture, tracing the development of general anaesthesia from early times, was illustrated with slides. He declared that the medical profession has paid scant attention to dental anaesthesia, despite the fact that anaesthesia depends for its very existence upon the work done by dentists over a hundred years ago. "When in 1846, in the presence of skeptical members of the medical association, he anaesthetized a patient with ether for the first time in history, Dr. W. G. T. Morton, a young Boston dentist, said to the surgeon, 'Doctor, your patient is

ready'. In operating rooms to this day anaesthetists unwittingly pay tribute to Dr. Morton by using these same words to the surgeon."

Dr. Balint Orban, one of the most outstanding men in Periodontia in the U.S., gave two lectures on January 3rd: "Diagnosis and Treatment of Periodontal Diseases" and "Biologic Principles of Occlusal Equilibration."

The Vancouver organization is noted for its study club activities. Dr. R. L. Scharff reports that these study clubs are active:

- Vancouver Ferrier Study Club
- Inter City Gold Foil Study Club
- Vancouver Paedodontic Study Club
- Endodontic Study Club of Vancouver
- Intercity Paedodontia Study Club
- Oral Diagnosis Study Club
- Vancouver Denture Study Club
- Second Vancouver Prosthodontia Study Club.
- Pastime Prosthetic Study Club

—D. H. M.

Vancouver will be the first city in Canada to have fluoridation units installed in private homes. Under a plan approved by the civic building and town planning committee, permits will be required for installing the units, costing about \$150.00 a piece.

—The Canadian Observer

Ontario

The **London Dental Society** recently honoured Dr. Earl West Fuller of London with a life membership.

Dr. Fuller, who retired last June after practising for over 40 years, was one of the founders of the dental clinic system in public schools. He was also presented with an engraved silver tray by Dr. J. A. Gillies, on behalf of the 74 members present at the dinner meeting.

The principal speaker was Dr. Maxwell Rockman, assistant professor at the Faculty of Dentistry, University of Toronto, and the president, Dr. James A. Guest, presided.

The **Lambton County Dental Association** held its Christmas Party and Dinner Meeting at the Sarnia Riding Club.

Dr. Wm. Fletcher was in charge of a social hour following the dinner meeting.

A retired dentist from Petrolia, Dr. J. A. Drummond, was guest of honour.

Dr. T. Van de Mark of the Faculty of Dentistry, University of Toronto, addressed the recent fall meeting of the **Durham On-**

tario Dental Society. His subject was "Radiography in Oral Surgery."

Following the dinner, a short business session was conducted by Dr. George Werry, president of the society.

The third and fourth in the current series of dental seminars provided by the **Dental Public Health Committee** of the Ontario Dental Association in cooperation with the Faculty, were held in Northern Ontario during the month of January. Drs. J. T. Crouch and A. W. S. Wood were the instructors at meetings held in Sault Ste. Marie on January 24 and 25, and North Bay on January 26 and 27.

The **Toronto Endodontic Study Club** held its October meeting at Hart House. The subject for discussion was Diagnosis in Endodontics. The speakers were Dr. George Hare and Dr. Harry Hunter, and they discussed different questions on the subject:

Question No. 1. When to undertake endodontic treatment following tooth injury with root fracture, considering the fracture at various levels?

Answer. 90% of transverse fractures occur in the middle 3rd and of these 40% remain vital. In fractures of the cervical 3rd prognosis is poor. Why do these teeth, although they are not hard enough to be split, remain vital? So long as the nerve is not scissored off by the root fragments it may remain vital. Part of the salvation is fracture itself, as the fracture line enables surplus pressure to ease off from the irritated nerve. The degree of the vitality of the injured nerve will vary. The two parts of the root, if pushed out of line, will definitely devitalize the tooth. Treatment consists of splinting these teeth if they are very mobile; do not believe any pulp tests taken less than 8 weeks after the injury. Keep under observation for two years and use a day pad to make sure of this recheck. If the tooth becomes non-vital, use the immediate root resection method, taking out the fractured section of the root and smoothing off the apex. It is not too easy to find the fracture sometimes, to remove the fractured end.

Question No. 2. The problem of pulp disintegration in an apparently sound tooth?

Answer. Assuming no caries—any disintegration involves a history of trauma. There are varying degrees of injury. It may be enough to disrupt the blood supply of the tooth in the periodontal membrane, and then you get a reticular atrophy in the blood vessels of the pulp. The normal pulp has great anastomoses and this can be reduced without the tooth being symptomatic, by a

minor injury. If the injury is severe enough to completely sever the blood supply, the nerve completely disintegrates. Lateral channels do no harm if they empty into a normal periodontal membrane, but if a periodontal condition is present, it will cause trouble. It is always good procedure to insist that periodontal disease be cleared up before endodontic treatment is instituted.

Question No. 3. When to recommend retreatment of a previous unsuccessful treatment?

Answer. 1. Establish the reason for the fracture.

2. Take it for granted that the root canal is not hermetically sealed.

3. Can the root filling be removed? or can the apical 3rd be sealed?

4. Consider the age, general health and tone of the oral tissues.

5. Consider abnormal stresses now placed on the tooth, which were not there when the original filling was done.

6. If resection can be done the prognosis is good; if resection cannot be done, prognosis is not as good.

7. If cases have been overfilled? With penicillin we can selectively overcome infection and destruction of vital tissue. It is better to overshoot the mark than to be short, but if you have driven some necrotic material past the apex the penicillin will look after it and the natural tissue processes will handle it. You do not have to use a cauterizing material which will kill any living tissue that tried to get rid of the necrotic material, it causes a stalemate. There is evidence that the antibiotics diffuse into the lateral canals. Lateral condensation forces cementing medium into the lateral canals.

Question No. 4. The cause of pain during endodontic treatment and not helped by change of drugs.

Answer. Pain suggests pressure. There is an accumulation of fluid that causes it, and somewhere you have blockage that does not let the inflammatory exudate get out. Even though the canal is open the apex may be blocked and not letting the exudate out. Use sedation to the limit until fluid localizes (a grain of Codeine).

It is possible the pain may be due to a traumatogenic occlusion. This keeps it up. (Use $\frac{1}{2}$ gr. of Codeine and 5 gr. Aspirin.)

Question No. 5. Patient asks will tooth turn dark, will it last, should I have it extracted?

Answer. Explain to the patient the course of procedure. The preparation of the channel (not canal) which held the artery, vein and nerve.

Dead tooth in mouth—Not a dead tooth.

Nature won't allow anything dead to remain in the body. Do not use anaesthetic to extract if it is dead.

Tooth dark.—Used to use Iodine and Silver nitrate. Now our drugs are white or colourless. No discoloration, but not the translucency of a vital tooth with pink blood in it. Also you can always have a porcelain jacket made.

How long will it last?—Percentage of success is well up to 90%. It is your tooth, you have two choices. It is their decision.

P.S.

Saskatchewan

The autumn meeting of the **Council of Dental Surgeons of Saskatchewan** was held in Regina, November 21st and the 22nd. The following officers were elected:—

President—Dr. J. P. Whyte, Swift Current.

Vice President—Dr. F. R. Smith, Saskatoon.

Members: Dr. Walter Hancock, Fort Qu'Appelle; Dr. Duff Leask, Moose Jaw; Dr. W. Watchler, Yorkton.

Provincial Committee Chairmen:

Dental Public Health—Dr. Hancock.

Health Insurance Studies—Dr. R. D.

Reid, Prince Albert.

Public Relations—Dr. F. R. Smith.

The Council had received a brief from the Department of Health regarding the New Zealand Dental Nurse Plan and were to discuss this matter with Department officials at the time of the Council meeting. This matter was of such importance that the Council arranged for the Secretary of the C.D.A., Dr. Don W. Gullett to be present to state his opinion as he has made a detailed study of the plan.

The following were elected to office in the **Prince Albert Society**: President, Dr. G. H. Janzen and Secretary-Treasurer, Dr. N. R. Fedirko. L. D. D.

NATIONAL DENTAL EXAMINING BOARD OF CANADA

EXAMINATION SCHEDULE—1955

Duration of each written examination session—2½ hours

Monday, June 6th

	West of Brandon	East of Brandon
Operative Dentistry	9.00 a.m.	10.00 a.m.
Oral Surgery, Anaesthesia & Pathology	1.30 p.m.	2.30 p.m.

Tuesday, June 7th

Prosthodontics	9.00 a.m.	10.00 a.m.
Ethics, Jurisprudence & Practice Management	1.30 p.m.	2.30 p.m.

Wednesday, June 8th

Preventive Dentistry	9.00 a.m.	10.00 a.m.
Oral Medicine	1.30 p.m.	2.30 p.m.

Thursday, June 9th

Two half-hour oral examinations	9.00 a.m.	10.00 a.m.
(interval at discretion of Oral Examiner)		

Oral examination will be in the application of basic sciences to clinical dentistry.

Applications accepted as candidates for examinations will be notified individually as to the place they shall report for examination.

The National Dental Examining Board issues a certificate to successful candidates which may be registered with any or all Canadian Provincial Licensing Boards for the purpose of securing a license to practice in the respective province.

Application on the proper form must be submitted to The Secretary, National Dental Examining Board on or before April 15th, in order to be acceptable for the annual examination. Application forms may be secured at the office of your Faculty of Dentistry or by writing the Secretary. All correspondence relating to the N.D.E.B. should be addressed to:

Dr. H. N. Beach, Secretary,
National Dental Examining Board of Canada,
150 Metcalfe Street,
Ottawa, Canada.

Correspondence

TO THE EDITOR:

I respectfully request your assistance in an effort to trace and identify a female body which was found at Collingwood, Nov. 30/54. At present, the only means of positive identification is an upper denture which, according to the advice of several Dentists in this area, has salient features of an unusual nature. It was suggested that an item in the Canadian Dental Association Journal together with a diagram or photograph of the teeth, might bring the desired result. Following is a description of the denture referred to:— Full upper denture poorly cleaned and neglected. Pink acrylic texture like vernonite but more bluish tinge. Thin anterior and posterior flanges. Immediate insertion with socket area ground off even, not polished. Double post dam about 1/8" between post dams. Medium thickness relief chamber, edges quite sharp, broad and pointed. N.H.Ant. Mould A25—Shade 62. Posteriors trans-

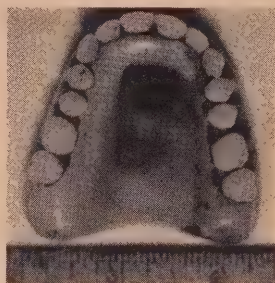
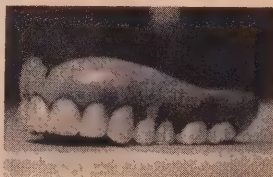
lucent probably solila—spaced first molar area—Ends.

In the above connection, I am enclosing three photographs of the denture in the hope that you may see fit to have same appear in the Journal. Seemingly, the double post dams and relief chamber are not ordinarily used, and it may be that the Dentist or Dental Mechanic who manufactured the teeth, might possibly identify his work and thus trace the owner of same.

In the event that an item is published in the Dental Journal and if any member of the dental profession should believe that this denture originated in his laboratory, I can arrange for production of same for closer examination.

In conclusion, may I state that it will be very much appreciated if you feel disposed to assist us in the manner suggested.

Yours very truly,
L. Elliott
Chief Constable.



NOTICES

Applications will be received up to March 1st for the graduate course in Orthodontics at the University of Toronto. The course commences on September 1, 1955, and continues for a period of two academic years. Enrolment is limited to four graduates of approved dental schools. The applicants must possess satisfactory scholastic standing acceptable for enrolment for the Master of Science degree in the School of Graduate Studies of the University of Toronto. For further information and application forms address all inquiries to: The Dean, Faculty of Dentistry, University of Toronto, 230 College St., Toronto, Ont.

A position will be available January 1, 1955, as Research Assistant in the Department of Bacteriology, School of Dentistry, Washington University, at an annual salary of \$3,800-4,000, provided for two years under research funds.

The Research Assistant will participate in research on microbic ecology, along lines indicated in J. Bact. 67: 135, 1954, working with Dr. Rosebury on microbiological aspects, and with Dr. Blake Moore of the Department of Biochemistry on biochemical aspects.

Requirements are as follows: a young person, man or woman, either a recent graduate with college training emphasizing mathematics, chemistry and biology (including bacteriology), or preferably with training equivalent to the requirements for a master's degree in microbiology. The applicant must present qualifications for entrance to the Graduate School of this University. The D.D.S. degree is not required, but applications from recent dental graduates interested in a research career will be welcomed.

The applicant selected will spend full time on research for two years. Thereafter, assuming satisfactory performance this Department will endeavor to provide financial support to permit the person to qualify for the Ph.D. degree in Bacteriology at Washington University. Applicants interested in this provision will be given preference.

Applicants should send full particulars to: Theodor Rosebury, Department of Bacteriology, School of Dentistry, Washington University, 4559 Scott Avenue, St. Louis 10, Mo.

In Memoriam

Thomas Neil Scott—Dr. Thomas Neil Scott of Toronto died December 29, 1954 as the result of a heart attack. McIntyre, Ontario was his birthplace in 1896, but Collingwood was where he received his early education, matriculating in 1923. His early education was disrupted during the first World War. In 1915 he enlisted with the 95th Battalion and was transferred in September 1916 to the 4th Canadian Battalion. His Overseas service was with the Intelligence Corps and he gained his commission in the field. Dr. Scott was wounded at Vimy Ridge.

In 1928 he graduated from the Faculty of Dentistry, University of Toronto and commenced practice in Toronto where he remained until his death. In 1930 Dr. Scott earned the B.Sc. (Dent) degree and later in 1941 the M.Sc. (Dent) both from the University of Toronto.

Dr. Scott was Assistant Professor of Prosthodontics at the Faculty and was a past president of the Toronto Central Dental Association. As well, he was one of the founders of the Dental Alumni Association of the University of Toronto.

Dr. Scott was a charter member of the Forest Hill United Church and a member of Victoria Lodge, L.O.L. 584 and Delta Lodge A.F. and A.M.

Surviving are his wife, Mary Maudie Black, a brother, Wesley J. Scott of Creston, B.C. and a sister, Mrs. Harry Harris of Winnipeg, Manitoba.

Harry L. Douglas—Dr. Harry L. Douglas of Lloydminster, Sask., passed away on November 12, 1954.

Born in Butler, Missouri, in 1889, he came to Canada with his wife in 1921. For some years he lived in Eastend, Climax, Leader and Alsask, moving to Lashburn in 1936. In 1941 he moved to Lloydminster.

Dr. Douglas was actively interested in all affairs pertaining to the welfare of the community and at the time of his death was chairman of the Lloydminster Public Library Board, president of the Lloydminster Branch of the Canadian Cancer Society, a member of the Board of Trade, and a past president of the Rotary Club and the Lloydminster Curling Club.

Dr. Douglas is survived by his wife, Alba, and one brother, Thomas Douglas of Bolivar, Missouri.

Wilbert Glenn Davis—Dr. Wilbert Glenn Davis of Toronto passed away on December 14th, 1954. He was 61.

Born near Flesherton, Ont., Dr. Davis graduated from the Royal College of Dental Surgeons of Ontario in 1923. He practised in Toronto for nearly thirty years, and for the past three years was on the staff of the North York Township Health Department.

Dr. Davis was a member of the Toronto Academy of Dentistry and of the Toronto East Dental Association. He was a past master of the Grey Lodge, A.F. & A.M., a former elder of Bellefair United Church, and a member of St. Patrick's Chapter, R.A.M., also the Scottish Rite, of Dianne Lodge, L.O.L., and the Balmy Beach Lawn Bowling Club. He had been an active golfer, and a keen hunter and fisherman.

Surviving Dr. Davis are his wife, the former Margaret Eva Spencer; one daughter, Nancy; three brothers, Thomas, William, and Ernest; and two sisters, Mrs. Gordon Badgerow and Mrs. Clinton Kennedy.

Arthur Baxter Mair—Dr. Arthur Baxter Mair of Highland Park, Michigan, passed away on November 11th, 1954. He was 54.

Dr. Mair, who was born in Collingwood, Ontario, graduated from the Royal College of Dental Surgeons of Ontario in 1922, and practised in Detroit for twenty-five years.

During world war I Dr. Mair served with the Royal Air Force. He was a member of the Episcopal Church in Detroit.

Surviving is his wife, the former Marjorie McFarlane of Hamilton; and a brother, A. K. Mair, of St. Thomas.

Vivian Clifford Marshall—Dr. Vivian Clifford Marshall died at Desbarats, Ontario on December 3, 1954. Born at Shelbourne, Ontario in 1885, Dr. Marshall received his early education in Owen Sound and was graduated from the R.C.D.S. of Ontario in 1907. He practised in Collingwood, Owen Sound, Richard's Landing and Desbarats.

During World War I, Dr. Marshall was a captain in the Canadian Dental Corps. He was a member of the United Church of Canada and the Masonic Order.

He is survived by his wife, and two children, Claire of Whitby and John of Desbarats.

LADIES' PROGRAMME

Joint Convention C.D.A.-O.D.A., Toronto, May 15-18

The following tentative programme has been prepared for the pleasure and entertainment of the ladies attending the Convention.

Sunday, May 15th

2.00 - 5.00 p.m.

8.45 p.m.

- Registration
- Musicale

Monday, May 16th

9.00 - 11.45 a.m.

10.00 - 11.30 a.m.

6.30 p.m.

- Registration
- Coffee Party
- Buffet Dinner and Entertainment
- Old-fashioned Fashion Show staged with courtesy of the Alpha Gamma Delta Fraternity

Tuesday, May 17th

9.00 a.m. - 5.00 p.m.

1.00 p.m.

6.30 p.m.

- Registration
- Luncheon and Tour of Casa Loma
- Convention Dinner and Dance

Mrs. P. G. Anderson

Mrs. H. R. Bateman

Co-Chairmen

CANADIAN DENTAL ASSOCIATION CONVENTION ART EXHIBIT

A popular feature of past conventions, The Art Exhibition, will again be presented this year at the 1955 C.D.A.-O.D.A. Convention in Toronto (May 15-18).

Any dentist, his immediate family or associate (dental supply dealer, lab technician, dental nurse, or hygienist) is eligible to exhibit, and all forms of art are welcomed — oils, watercolors, sculpture, photographs, handicrafts, etc.

Works of art will be judged and suitable recognition made in each category.

**Write for information to:— Dr. Maxwell N. Rockman
436 Palmerston Blvd.
Toronto, Ontario**

JOINT MEETING

THE CANADIAN DENTAL ASSOCIATION
THE ONTARIO DENTAL ASSOCIATION

Royal York Hotel, Toronto

Board of Governors: May 11-14, 1955

Convention: May 15-18, 1955

ADVANCE REGISTRATION AND HOTEL ACCOMMODATION

The Registration Fee for the Profession is \$20.00 Advance Registration facilitates convention arrangements and therefore, saves your time.

Hotel reservations MUST be made directly with the hotel of your choice.

C.D.A.-O.D.A. Convention Registration Form

Applicant: Name
(please print)

Address
.....

I will be attending Convention alone? Yes No

I will be accompanied by my wife? Yes No

My cheque for the REGISTRATION FEE (\$20.00) payable at par, Toronto is enclosed.

(Sign here)

MAKE CHEQUE PAYABLE TO: "The C.D.A. - O.D.A. Convention Account"

MAIL APPLICATION FORM AND CHEQUE TO: Mrs. Peggy Booker,
Treasurer,
234 St. George Street,
Toronto, Ontario.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1955—Toronto, Ontario, May 15th—18th

1956—Banff, Alberta, June 3rd—6th

1957—Winnipeg, Manitoba, June 23rd—26th

FUTURE EVENTS

Date	Function	Location	Officer	Address
Feb. 17	Dental Club	Montreal	Dr. Gordon Kelly	1414 Drummond St.
Feb. 18.	Dentistry-At-Home.	Royal York Hotel, Toronto.	Mr. G. S. Bowles	230 College St., Toronto.
Feb. 21	Dental Club	Montreal	Dr. Gordon Kelly	1414 Drummond St.
Mar. 9-10	Tufts College Dental School Alumni Association Annual Mid-Winter Meeting	Boston	Dr. Nathan Fink	Tufts College Dental School Alumni Association, 136 Harrison Ave., Boston 11, Mass.
Mar. 21	Academy	Toronto	Dr. J. Bevan King	1414 Danforth Ave.
Mar. 24	Academy	Toronto	Dr. J. Bevan King	1414 Danforth Ave.
May 15-18	Joint Convention C.D.A.-O.D.A.	Toronto	Dr. Don W. Gullett	234 St. George St., Toronto, Ont.
June 19-23	Annual Berkshire Conference	Lennox, Mass.	Dr. Irving Glickman	Tufts College Dental School, 136 Harrison Ave., Boston 11, Mass.

SHORT GRADUATE COURSES

Date	Course	Location	Address
Mar. 7-11	Endodontics	University of Toronto	The Dean, Faculty of Dentistry University of Toronto, 230 College St., Toronto 2-B.
Mar. 7-12	Anaesthesia & Oral Surgery	University of Montreal	Dean, Faculty of Dental Surgery, University of Montreal, P.O. Box 6128, Montreal, P.Q.
Mar. 7-12	Crown and Bridge	as above	as above
Mar. 14-19	Endodontics	as above	as above
Mar. 14-19	Operative Dentistry	as above	as above
Mar. 14-19	Periodontics	as above	as above
Mar. 14-19	Prosthetics	as above	as above
Mar. 14-19	Radiodontics & Diagnosis	as above	as above
Mar. 28-Apr. 1	Orthodontics	University of Toronto	The Dean, Faculty of Dentistry, University of Toronto, 230 College St., Toronto 2-B.
Apr. 11-15	Orthodontics (for the Specialist)	as above	as above
Apr. 25-29	Periodontics	as above	as above
May 2-6	Dental Oral Surgery & Anaesthesia	as above	as above

CLASS AND FRATERNITY FUNCTIONS

Class	Function	Date & Time	Place	Officer
2T3	32nd Reunion Dinner	May 16 6.30 p.m.	P.D.R. 9 Royal York Hotel	Colton Bliss, 170 St. George St., Toronto, Ont.
2T5	30th Reunion Dinner	May 16 6.30 p.m.	P.D.R. 8 Royal York Hotel	Lloyd M. Grose, 663 Greenwood Ave., Toronto, Ont.
3T0	25th Reunion Get-together Party (with wives)	May 15 4.00 p.m.	138 Lytton Boulevard	Bill Dewar, 138 Lytton Blvd., Toronto, Ont.
	Reunion Dinner	May 16 6.30 p.m.	Library, Royal York Hotel	as above
3T5	20th Reunion	May 16, 6:30 p.m.	Details later	Earl Bancroft, 86 Bloor St. W. Toronto, Ont.
4T0	15th Reunion	Further details later		Gordon Doan, 170 St. George St., Toronto, Ont.
5T0	5th Reunion Party	May 16 (Class members will be notified of further details)		Ewart A. Jones, 11 Barker Ave., Guelph, Ont.
5T2	3rd Reunion Dinner	May 16, 6:30 p.m.	P.D.R. 10 Royal York Hotel	C. G. Montieith 2842 Bloor St. W., Toronto, Ont.
Alpha Omega Fraternity	Annual Closing Dinner	May 16 6.30 p.m.	Tudor Room, Royal York Hotel	Ben Gross, 816 Bathurst St., Toronto.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Contribution à l'étude de la carie dentaire et des possibilités de l'éviter

1. Il est, à l'heure actuelle, presque universellement admis que la carie tient à une attaque minérale des dents par les acides organiques qui se forment dans la cavité buccale. Mais les avis restent partagés quant au mécanisme intime de cette érosion, à son étiologie, comme à sa pathogénie, aux rôles respectifs des facteurs endogènes et des facteurs exogènes, à la part constitutionnelle et à la part accidentelle. De nombreuses théories s'affrontent, sans que jamais aucune d'elles, lors de sa confrontation avec les faits, ait pu s'imposer définitivement, en excluant les autres.

2. A considérer les choses d'un point de vue strictement pratique, celui des moyens à envisager pour l'instauration d'une prophylaxie efficace des caries dentaires, il est évident qu'aucun traitement causal ne pourra être mis en oeuvre, aussi longtemps que l'origine du mal restera un problème sans solution acceptable. C'est la raison pour laquelle nos Laboratoires ont repris cette étude, en s'efforçant de l'asseoir sur des bases en-

tièrement renouvelées, pour aboutir à des procédés plus aisément applicables en hygiène journalière.

3. *La stase salivaire* — Les recherches antérieures aux nôtres et relatives au comportement de la salive dans la bouche ont, autant dire, uniquement porté sur la salive "circulante", liquide complexe, homogénéisé par son mouvement incessant, et possédant à la fois un pouvoir défensif en faveur des différents appareils physiologiques de la mastication, et un pouvoir digestif, en même temps qu'un rôle de déglutition vis-à-vis des aliments ingérés. Sur ces divers points, nous n'avons guère à ajouter aux nombreux travaux de nos prédécesseurs.

4. Par contre, notre attention s'est arrêtée sur un point constamment laissé dans l'ombre, bien que, selon nous, son importance soit capitale dans la question qui nous occupe: il est mécaniquement obligé qu'une certaine portion de la salive soit arrêtée dans diverses anfractuosités de la denture: espaces proximaux, plis intercuspidiens, lignes de jonction des

collets et de leur revêtement gingival, etc. . . qui constituent autant de points d'élection dans l'éclosion et le développement des caries. Or, si la salive circulante, liquide *vivant* et sécrétion en constant renouvellement, jouit de propriétés physiques et physiologiques assez rigoureusement définies, la *salive de stase* est une eau dormante et en voie de mortification, un liquide fixé et bientôt figé, dont les possibilités générales deviennent tout autres que celles manifestées dans son état mouvant.

5. La phase cinétique maintenait dans un équilibre relativement stable les divers composants de la salive. La phase statique, tenant ces composants en repos forcé, permet l'évaporation progressive du solvant aqueux, la concentration et le dépôt des sels minéraux antérieurement dissous, la floculation suivie de précipitation des micelles colloïdales, l'épaississement et la thrombose des substances organiques et, en premier lieu, de la mucine, protéine dont le suc salivaire est le plus abondamment pourvu.

6. Comme il est de règle dans l'ensemble des processus naturels analogues à celui qui vient d'être dit, les corps figurés présents dans le champ d'action des phénomènes de condensation (débris alimentaires, cellules épithéliales desquamées, bactéries diverses vivant en saprophytes dans le milieu oral) sont englobés et emprisonnés dans le gel ou le sédiment en formation.

7. Les faits érosifs constatés ne sont rien d'autre qu'une conséquence plus ou moins inéluctable de l'arrêt, en une région déterminée, d'un liquide organique dont les fonctions physiologiques essentielles sont dépendants de son omniprésence, par circulation continue, dans le milieu buccal.

Sans la stase salivaire et la floculation de la mucine, il n'y aurait dans la bouche ni dépôts de tartre, ni caries dentaires, ni formation de films pigmentés sur la surface de l'émail. C'est la pellicule protéino-minérale qui, compte tenu de la constitution même de la dent, de ses malforma-

tions externes ou internes et de sa résistance aux attaques de toute nature provenant de son ambiance, est le facteur "déchainant", l'agent du déclenchement des processus initialement physiologiques, mais virtuellement ou actuellement pathologiques, pouvant se manifester dans la cavité orale.

8. *Les acides destructeurs*—L'hypothèse d'une origine directe de la carie par acidité de la salive ne peut être retenue, le pH salivaire ne descendant jamais assez bas pour qu'une attaque sensible de la dent soit possible. . . Nous ne pouvons retenir davantage une mise en cause des micro-organismes du milieu buccal et, plus particulièrement, le *Lactobacillus acidophilus*. Certes, la cavité orale favorise, par ses nombreux recessus, la pullulation microbienne, mais cette flore bactérienne, si elle élabore, par certains de ses agents, des substances acides, élabore également, par d'autres agents, des substances basiques. Il existe donc une neutralisation réciproque, démontrée par ce fait que les variations du Ph buccal, en un même point et chez le même individu, sont toujours transitoires.

9. Les hypothèses antérieures devant être tenues pour caduques, l'origine de l'activité destructrice ne peut plus être recherchée que dans une seule direction: on sait que la dislocation des polysaccharides s'effectue, dans notre organisme, sous l'action d'une série de ferments et diastases ayant chacun leur stade d'activité bien déterminé. Le ferment dissociant amidon et glycogène est présent dans toutes nos sécrétions, et, principalement, dans la salive. Grâce aux conditions que nous avons précédemment définies, le ferment est en situation d'exercer son pouvoir diastasique sur les débris alimentaires amylacés séjournant dans la bouche. Ainsi prennent naissance divers acides (lactique, butyrique, pyruvique, formique, etc. . .) susceptibles d'opérer des destructions de matière calcaire. *Seuls, les acides possédant une telle origine se forment en quantité suffisante pour que leur action puisse éventuellement devenir une réalité.*

10. *Attaque de la dent* — Pour que l'attaque de la dent puisse se produire effectivement, la coïncidence de plusieurs conditions est nécessaire. Les unes sont relatives aux modalités concernant les substances attaquantes, les autres aux modalités concernant le dispositif attaqué, ce dernier possédant normalement des réactions, non négligeables, de défense.

11. Les auteurs, pour la plupart, ont cherché à réaliser *in vitro* des attaques de l'émail par des acides concentrés et fortement ionisés. De tels essais ne permettent aucune conclusion valable, les conditions en étant trop éloignées de celles qui existent dans la bouche du vivant. Un principe bien connu de tous les pathologistes réside en ceci qu'une attaque faible, mais indéfiniment répétée, entraîne à sa suite des lésions plus graves et plus tenaces, à l'ordinaire, que celles provenant d'une attaque massive, mais unique. C'est sur le premier de ces deux modes que s'organise, avec le concours de la mucine précipitée, l'érosion capable de dominer la faculté d'auto-réparation que possède normalement notre économie.

12. S'il est donc incontestable que la consommation habituelle d'aliments ou de boissons acides peut renforcer l'action corrosive des résidus en cours de fermentation dans les anfractuosités de la denture, il est non moins certain que, dans la dégradation de la matière calcaire, le rôle principal revient aux dégagements acides provenant de la lyse d'aliments amylacés. C'est donc dans une large et habituelle consommation d'aliments amylacés et sucrés que réside le plus sérieux danger de carie, l'excès d'Hydrates de Carbone fermentescibles entraînant à sa suite une acidification entretenue localement, aux points même où se maintiennent les conglomérats déterminés par la mucine de stase.

13. Aux diverses atteintes d'ordre chimique auxquelles elle peut être soumise, la dent oppose divers moyens défensifs. C'est de la valeur individuelle de ces derniers que dépend l'intégrité de l'appareil dentaire. Sans nous appesantir sur chacun d'eux (pouvoir tampon de la salive, ba-

layage mécanique des détritiques par jeu combiné des mouvements de la langue et de la circulation salivaire, etc. . .) arrêtons-nous seulement sur certains points essentiels.

14. La dentine, sécrétion du conjonctif, est un élément de soutien assimilable à un ciment calcaire. L'émail, sécrétion épithéliale, est un ciment magnésien, c'est-à-dire, un revêtement pourvu d'une haute résistance à l'usure déterminée par les frottements de la mastication, en même temps qu'à l'érosion résultant du contact avec des agents chimiques nocifs. Pratiquement, l'émail présente une invulnérabilité que n'offre pas la dentine. Il n'est donc pas conforme aux faits réels, à ceux qui se déroulent *in vivo*, de mettre en avant une hypothétique "attaque de l'émail". La destruction partielle de ce dernier ne peut constituer qu'un phénomène d'ordre second, par effondrement ou dislocation des prismes survenant après une plus ou moins longue période d'incubation par infiltration. Et cette infiltration ne peut atteindre, puis détruire l'élément de soutien, l'assise proprement calcaire, la dentine supportant le carrelage adamantin que par cheminement, soit dans les espaces interprismatiques, soit à travers des failles ou des lacunes de la substance magnésienne. En conséquence, l'émail ne peut être pris qu'à *revers*, et non, s'il est sain ou de composition normale, par attaque se produisant directement.

15. Comme toutes les autres sécrétions organiques, solides ou liquides, l'émail est soumis à un renouvellement physiologique qui en l'espèce, est fort lent. D'autres part, si l'élaboration de son corpus magnésien exige un appréciable délai, il n'en reste pas moins que l'émail représente un tissu vivant, soumis à la même loi évolutive que tous les autres tissus de l'individu et ayant besoin d'un certain temps de maturation pour parvenir au maximum de sa qualité. Il n'est donc pas étonnant qu'en dehors des prédispositions constitutionnelles (héréditaires ou acquises) et des malformations

entraînant avec elles une fragilité anormale de la denture, la carie prend naissance sur des éléments jeunes, sur les dents faisant éruption entre 6 et 12 ans, c'est-à-dire, dans la période de vulnérabilité qui est une des caractéristiques de l'enfance.

16. C'est dans les sillons intercuspidiens des dents en éruption que l'on peut constater des hiatus rendant imparfaite la jonction des plages de l'émail en formation. Il y a également lieu de remarquer que la juxtaposition des dents détermine fréquemment une compression, donc un défaut de nutrition cellulaire retardant la maturation de l'émail et diminuant la résistance de celui-ci aux agents destructeurs. Dans ces deux cas, il y a défaut de coalescence des prismes adamantins et constitution de failles. Celles-ci ouvrent une voie d'accès jusqu'à la dentine, et les acides libérés par la fermentation des conglomerats mucinoglycidiens (résidus alimentaires enrobés dans les floculats de la mucine de stase) peuvent ainsi venir éroder la substance calcaire qui a cessé d'être protégée par l'émail.

17. Mais la formation histologique normale de la dent n'est pas définitivement entravée lors de ce processus d'attaque. Il se poursuit, donnant naissance à un antagonisme entre phénomènes destructeurs et phénomènes constructeurs. La soudure plus ou moins parfaite des plages de l'émail s'opère en laissant subsister dans ses plans sous-jacents des éléments déminéralisateurs susceptibles d'entraîner une carie interne, séquestrée et d'autant plus profondément située que la vitesse de calcification des dents marque de supériorité sur celle de leur attaque chimique. Dans la suite, quelques mois ou quelques années plus tard, une déminéralisation nouvelle pourra provoquer une carie externe, opérant sa jonction avec la carie séquestrée. On se trouvera alors en présence d'une dentine ramollie, ne présentant cependant aucun caractère microbien.

18. Il est possible que certains autres foyers de carie interne également dé-

pourvue d'éléments bactériens, viennent à se présenter. Ils ne peuvent provenir que de l'état général du sujet et de la calcification même de la dent. Mais cette phase d'état ne se produira pas si, dès le principe, les mucines de stase sont mises dans l'impossibilité d'entrer en jeu.

RÉSUMÉ

En résumé,

19. Sans la stase de la mucine salivaire, il n'y aurait dans la bouche, ni carie, ni tartre, ni enduits colorés.

20. L'hypothèse de l'origine directe de la carie par acidité de la salive ne peut être retenue, le pH salivaire ne descendant jamais assez bas pour qu'une attaque de l'émail soit possible.

21. L'étiologie de la carie réside, compte tenu de la constitution même de la dent, ainsi que de ses malformations externes ou internes, dans sa résistance plus ou moins forte aux différents acides organiques susceptibles de l'attaquer *in situ*.

22. Ces acides ne peuvent être formés en quantité et concentration suffisantes que par la dégradation fermentaire des débris amylacés provenant de l'alimentation.

23. Si la salive se renouvelle activement, elle s'oppose, par son pouvoir tampon renforcé de son pouvoir mouillant, à toute concentration d'acide, qu'elle neutralise au fur et à mesure de sa formation. Partout où la salive est *circulante*, elle s'oppose à toute modification permanente du pH buccal, la faiblesse du pouvoir tampon intrinsèque de cette salive étant compensée à la fois par son volume et par son mouvement.

24. Dans tous les points où la salive est appelée à séjourner, espaces proximaux, sillons intercuspidiens, collets (prothèses, couronnes et ponts, dont l'ajustement est imparfait) où viennent s'encaster des parcelles de substances alimentaires amylacées et sucrées, cette suspension colloïdale est rapidement inactivée: elle se condense, flocule et laisse précipiter sa mucine, déterminant une stase qui fera jouer à ce corps un rôle prédominant de

fixateur. *C'est cette stase mucoïde qui permet la désintégration des amylacés par les diatases salivaires et leur transformation en acides destructeurs.*

25. Contrairement à ce qui était généralement admis, il n'apparaît donc pas que les Bactéries soient un élément absolument nécessaire à l'apparition d'acides organiques dans la cavité buccale.

26. La période de formation définitive de la denture est particulièrement propice à l'éclosion de la carie. Cette période s'étend de l'enfance à l'adolescence, principalement de l'éruption des dents permanentes (6 ans) à la maturation définitive de l'émail (17 ans). Durant cet intervalle, la substance du revêtement de la dent, imparfaitement formée, reste vulnérable à diverses attaques mécaniques ou chimiques.

27. Par leur profondeur, les sillons intercuspidiens constituent un refuge permettant aux substances amylacées et sucrées (pâtisseries, chocolat, etc. . .) de s'amasser dans ses anfractuosités, de les obtenir, *d'en éliminer la salive circulante*, les acides pourront alors se former sans neutralisation intercurrente, à l'abri du revêtement constitué par la trame protéique de mucine précipitée, et sans que, pour autant, les Bactéries puissent être mises en cause.

28. Le pH local, peut, en certaines régions, avoir une valeur telle que les processus de fermentation soient entravés et

laissent la place à d'autres réactions; c'est ainsi que la neutralité du milieu, ou son alcalinité, agissent dans un sens propice à la formation de films colorés ou de dépôts de tartre, s'accumulant en strates superposées. Alors que dans le cas de carie, c'est la magma mucineux qui enrobe les parcelles alimentaires et les Bactéries saprophytes, dans le cas du tartre, c'est l'inverse: la substance minérale devenue insoluble enrobe protéines et microbes.

29. Tous ces enduits tendent à devenir indestructibles et le travail chimique qui s'y accomplit lentement tend à leur donner une réaction analogue à celle de la kératine: histologiquement, ils prennent identiquement les mêmes colorants; chimiquement, seule une fonction amine peut les désintégrer. Il s'ensuit que par l'utilisation d'amines tamponnées, qui peuvent être adjointes aux produits d'hygiène journalière on peut envisager, non la disparition totale, mais une régression importante des différents troubles pathologiques—caries, films colorés, tartre, dont nous venons de retracer l'étiologie, et la pathogénie.

CONCLUSION — De ce que nous venons d'exposer, il ressort que c'est uniquement par mobilisation de la mucine de stase qu'on peut instituer une thérapeutique causale, enrayant dans leur période précocité les conséquences nocives de la précipitation mucineuse. Ce but est atteint par l'emploi de certaines amines. La carie, *manifestation d'ordre chimique, ne peut être prévenue que par voie chimique.*

Mal de dent permanent

Eucizia Figueiredo, fermière d'Ilhavo, Portugal, a souffert d'un mal de dent durant 61 ans. A sa naissance, elle avait déjà trois dents et ces dents la firent souffrir de 1841 à 1902, quand un dentiste put la soulager. Après ce temps, par la force de l'habitude, elle continua de porter un bandage autour de la tête jusqu'à sa mort.

Nouvelles de l'Association

Le plan de la Croix-Bleue de l'A.D.C. atteint son objectif

A la date ultime, soit le 30 novembre, le nombre minimum des dentistes requis, pour que la Croix-Bleue accorde aux membres de l'A.D.C. la protection spécifiée en cas de maladie, a été atteint. Ce plan d'assurances a pris effet le 31 décembre. Entre-temps, ceux qui détenaient déjà d'autres polices de la Croix-Bleue avec des groupes différents et qui ont demandé de faire partie du groupe de l'A.D.C. seront intégrés dans ce nouveau plan, sans subir de perte financière; on annoncera plus tard la date où de nouveaux membres pourront demander leur admission dans ce plan de l'A.D.C. On doit adresser toutes ses demandes de renseignements au Plan d'Assurance-Pension de l'A.D.C., C. P. 70, Brockville, Ont.

La Colombie britannique augmente son octroi annuel à l'A.D.C.

Le registraire du Collège des Chirurgiens-Dentistes de la Colombie britannique annonce officiellement qu'à une réunion du Conseil du Collège, tenue les 18, 19 et 20 novembre, on a décidé de porter à \$20.00 la cotisation annuelle à l'A.D.C. de tous les membres en exercice du collège de cette province, en reconnaissance du splendide travail de l'A.D.C. Cette décision prendra effet en 1955.

Equippement pour fluorurer l'eau dans une maison

Le secrétariat a reçu un grand nombre de demandes de renseignements de personnes qui désiraient se procurer un appareil destiné à fluorurer l'eau d'une maison en particulier. Quelques-unes de ces demandes mentionnaient que des vendeurs de ces équipements prétendaient que leur produit avait reçu l'approbation d'organismes officiels. Un manufacturier a demandé à l'Association dentaire canadienne d'approuver son appareil et l'Association a refusé. L'Association a fait enquête auprès des organismes, dont les noms sont mentionnés dans les lettres, et aucun de ces groupements officiels a donné son autorisation ou son approbation pour des équipements du genre. La question présente quelque intérêt, mais au meilleur de notre connaissance, jusqu'à maintenant on n'a pas trouvé d'appareillage sûr et effectif pour fluorurer d'eau des domiciles particuliers.

Notes sur la fluoruration

—Les villes de Saskatoon et de Régina, en Saskatchewan, ont voté le 3 novembre dernier sur la question de la fluoruration. Saskatoon a dit "oui" et Régina "non."

—A Pointe-Claire, P. Qué., on a installé un appareil pour fluorurer l'eau; cette municipalité est la première de la province de Québec à poser ce geste.

—Selon les journaux, Vancouver est la première ville du Canada à permettre aux particuliers d'installer dans leurs demeures des appareils pour fluorurer l'eau.

—A Brantford, le rapport de 1954 continue de montrer la même tendance après 9 ans de contrôle.

600,000 personnes font traiter leurs dents aux Etats-Unis selon un plan de pré-paiement

Un relevé entrepris par le Ministère fédéral de la Santé, de l'Education et du Bien-Etre des Etats-Unis rapporte qu'un total de 600,000 personnes souscrivent à un plan quelconque de santé de pré-paiement pour le soin de leurs dents. Plusieurs de ces plans ne s'adressent qu'aux membres d'un même syndicat et son desservis par des dentistes qui pratiquent en groupe. Les classes d'individus adhérent à des plans du genre sont les suivants: 363,000 sont des travailleurs et leurs dépendants, qui reçoivent des traitements dentaires grâce à un fonds contributoire pour les employeurs et les employés; 62,000, grâce à un plan d'un syndicat; 147,000, grâce à des plans s'adressant aux habitants d'une localité; 14,000, grâce à des plans de coopérative et 9,000, grâce à des plans sociétaires.

Injonction contre les laboratoires qui font des affaires par la poste aux Etats-Unis

Le 15 novembre dernier, la Cour Supérieure de Chicago a émis une injonction permanente contre vingt-cinq laboratoires de l'Etat de l'Illinois.

Ce jugement constitue une victoire pour la profession dentaire et pour les laboratoires réguliers; il a une grande portée et rend service à la population, en améliorant les traitements qu'elle reçoit. Depuis plusieurs années, différentes régions du Canada ont souffert de l'activité de ces laboratoires, qui vendaient des prothèses par la poste. Presque toujours ces laboratoires qui exerçaient ce négoce infâme, étaient situés dans les alentours de Chicago. Ce jugement devrait mettre un frein aux agissements de ces laboratoires.

Fascicule sur les cancers de la cavité buccale

Grâce à la générosité de l'Institut national du Cancer du Canada, l'Association dentaire canadienne a pu obtenir un certain nombre de fascicules intitulés "Mouth Cancer and the Dentist." Cette publication a été fort en demande et on a dû en faire une deuxième édition. Ce petit livre renferme des illustrations en couleurs et s'avère d'une grande valeur pour l'éducation. On peut s'en procurer une copie, en écrivant à l'Association dentaire canadienne, 234 rue St-Georges, Toronto, Ont.

Société de Stomatologie de Grèce

Nous avons l'honneur de vous informer que le Deuxième congrès Panhellénique aura lieu à Athènes, du 25 au 30 septembre 1955. Les principaux sujets à l'étude seront les suivants:

- 1) Dentisterie sociale
- 2) Pédiodontie (prévention-fluor)
- 3) Pathologies gingivales (traitement)
- 4) Endodontie (traitement de canal)

Les sujets à l'étude feront l'objet de conférences, de cliniques, de pellicules cinématographiques et d'une exposition de manufacturiers d'appareillages dentaires. La décision de la Fédération dentaire internationale de tenir une réunion spéciale à Athènes en même temps que le deuxième Congrès Panhellénique confèrera à ces assises un caractère international. Nos confrères grecs désirent vous assurer du plaisir que vous leur ferez en leur fournissant l'occasion de vous accueillir dans leur pays et de tous leurs efforts pour rendre votre séjour en Grèce le plus agréable et le plus confortable possible. Pour faciliter votre voyage en Grèce, la Société verra à faire réduire le plus possible les frais de transport et les prix des hôtels et vous en avisera le plus tôt possible.

Avec les sentiments les plus confraternels,
Th. Mavrogordatos,
Président du deuxième
Congrès Panhellénique
B. Stefanopoulos-Vrettos,
Président de la Société de Stomatologie
de Grèce

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Enquête sur l'Économie de l'exercice dentaire—1954

Deuxième partie

Revenu des dentistes en rapport avec la localité et l'âge

Dans les lignes suivantes, on emploiera le mot "moyenne". On obtient cette moyenne en additionnant les revenus et en divisant par le nombre des revenus additionnés. Le dictionnaire nous dit que le revenu net comprend tous les revenus perçus par le dentiste pour ses services, moins les dépenses encourues et avant que l'impôt sur le revenu soit déduit. La moyenne du revenu net pour 1953 du tiers des dentistes, qui ont répondu au questionnaire, était de \$7,541.00. La moyenne du revenu net des dentistes travaillant à salaire était de \$5,783.00

La moyenne des revenus bruts des dentistes canadiens, qui ont répondu, était de 14,617. Le pourcentage de la moyenne du revenu net comparé à la moyenne du revenu brut se chiffrait à 51.6%. Cela veut dire que le revenu, avant la déduction des taxes, représentait, pour la moyenne des dentistes, 51.6% de chaque dollar reçu en honoraires. Les diverses moyennes des revenus par province apparaissent dans le Tableau No 1. On verra que la Colombie britannique

est en tête des provinces pour la moyenne du revenu brut, mais que Saskatchewan mène pour la moyenne de revenu net. Cela provient du fait qu'en Colombie britannique il en coûte plus cher pour exercer la profession (50.9%), tandis qu'en Saskatchewan, il en coûte moins cher (45.2%).

Dans le Tableau No 1, la liste des "vides" veut dire que le dentiste a oublié d'indiquer la province où il exerce sa profession. La liste "autres" comprend les dentistes qui pratiquent au Canada, mais non dans une province donnée. Le nombre de ces réponses "vides" et "autres" est bien restreint et il peut être négligé quand il s'agit d'établir des comparaisons; il est tout de même compris dans les moyennes générales.

On remarquera dans le Tableau No 1 que l'addition de la moyenne du revenu net et des dépenses ne donne pas toujours la moyenne du revenu brut indiquée. Cela est dû au fait que certaines réponses ne donnaient que le revenu net et que d'autres n'indiquaient que les dépenses ou le revenu brut et parfois que deux items. Dans le classement, pour avoir des résultats aussi précis que possible, on a utilisé tous les chiffres contenus dans les questionnaires. Cela explique les différences.

TABLEAU NO 1

Moyenne du revenu net des dentistes indépendants par province

Province	Moyenne du revenu net	Moyenne des dépenses	Moyenne du revenu brut	Pourcentage du revenu net en rapport avec le revenu brut
Vides	9590	6900	17143	56.0
Colombie britannique	8454	8535	17235	49.1
Alberta	8141	8308	16139	50.4
Saskatchewan	9313	7507	16980	54.8
Manitoba	7337	6787	14049	52.2
Ontario	7901	6280	14802	53.4
Québec	5816	4968	12189	47.7
Nouveau-Brunswick	8062	7020	15168	53.2
Nouvelle-Ecosse	6015	4716	10834	55.5
Ile-du-Prince-Edouard	5856	5977	12923	45.3
Terre-Neuve	6902	7215	14115	48.9
Autres	7104	6293	13827	51.4
Canada	7540.9	6708.1	14617	51.6
Dentistes salariés: moyenne du revenu net ..	5783			

Enquête sur l'économie de l'exercice dentaire—A.D.C. 1954

Le Tableau No 2 montre le pourcentage du nombre des dentistes en rapport avec les revenus nets pour 1953. On remarquera que 50% des dentistes rapportent un revenu net qui varie entre \$4950. et \$9949. Le pourcentage de ceux qui rapportent un revenu

net au-dessus de \$14949. est petit, quoique quelques-uns rapportent un revenu net aussi élevé que \$29950. et plus. 33.9% des dentistes employés à temps complet gagnent entre \$950. et \$6949. Les plus hauts salaires se chiffrent entre \$17950. et \$18949.

TABLEAU NO 2

Pourcentage du nombre des dentistes en rapport avec les revenus nets pour 1953

Revenus nets	Tous les dentistes	Dentistes indépendants	Dentistes salariés
Vides.....	6.5	7.4	0.4
1 - 949.....	1.3	1.0	3.0
950 - 1,949.....	2.3	2.1	3.3
1,950 - 2,949.....	4.0	3.6	6.6
2,950 - 3,949.....	5.6	6.1	2.1
3,950 - 4,949.....	5.9	5.7	6.6
4,950 - 5,949.....	10.1	8.0	23.1
5,950 - 6,949.....	12.9	9.7	33.9
6,950 - 7,949.....	11.0	10.9	12.0
7,950 - 8,949.....	8.8	9.5	4.1
8,950 - 9,949.....	7.2	3.1	1.2
9,950 - 10,949.....	7.1	7.9	2.1
10,950 - 11,949.....	5.1	5.9	0.4
11,950 - 12,949.....	3.8	4.4	0.4
12,950 - 13,949.....	2.0	2.2	0.4
13,950 - 14,949.....	2.2	2.5	
14,950 - 15,949.....	1.0	1.1	
15,950 - 16,949.....	0.7	0.8	
16,950 - 17,949.....	0.5	0.6	
17,950 - 18,949.....	0.5	0.6	0.4
18,950 - 19,949.....	0.3	0.4	
19,950 - 24,949.....	0.8	0.9	
24,950 - 29,949.....	0.2	0.3	
29,950 et plus.....	0.2	0.3	
Total.....	100.0	100.0	100.0

Enquête sur l'économie de l'exercice dentaire, A.D.C. 1954

Le Tableau No 3 indique la moyenne des revenus nets des dentistes indépendants en rapport avec l'importance de leur localité, pour 1953. On verra que les revenus nets les plus élevés se trouvent dans les villes qui ont de 250,000 à 500,000 de population.

Les différences qui existent dans les revenus nets ne diffèrent pas beaucoup dans les villes dont la population varie entre 50,000 et 500,000 habitants, mais l'écart est remarquable pour les petites et les grandes villes.

TABLEAU NO 3

Moyenne des revenus nets des dentistes indépendants avec l'importance de leur localité

Importance de la ville	Pourcentage des réponses	Moyenne des revenus nets
Vides.....	.8	6761
moins de 1,000.....	1.5	5515
1,000 à 2,500.....	4.9	5429
2,500 à 5,000.....	3.4	6182
5,000 à 10,000.....	10.4	6624
10,000 à 25,000.....	12.1	7930
25,000 à 50,000.....	9.9	7881
50,000 à 100,000.....	8.1	8294
100,000 à 250,000.....	14.1	8266
250,000 à 500,000.....	8.5	8563
500,000 et plus.....	21.3	7812
Total.....	100.0	

Enquêtes sur l'économie de l'exercice dentaire, A.D.C. 1954

Le Tableau No 4 donne les rapports qui existent entre l'âge des dentistes et leur revenu. Les dentistes qui ont 35 à 39 ans inclusivement ont des revenus plus considérables que n'importe quel autre groupe

d'âges. Les dentistes employés à temps complet atteignent les plus hauts salaires à un âge assez avancé (45 à 49 ans). La diminution du revenu des dentistes après 54 ans est assez drastique. Il faut souligner com-

me caractéristique le rapport entre le revenu net et le revenu brut des dentistes de 65 ans et plus; ce pourcentage peut indiquer

justu'à un certain point l'effet de l'augmentation des dépenses pour exercer depuis quelques années.

TABLEAU NO 4

Age des dentistes et moyenne de leur revenu 1953

AGE	TOUS LES DENTISTES	DENTISTES INDEPENDANTS			DENTISTES SALAIRES
		Moyenne du revenu net	Moyenne du revenu brut	Pourcentage du revenu net comparé au revenu brut	Moyenne du revenu net
Vides.....	5089	5478	10298	53.2	3337
25 - 29.....	5934	6297	12435	50.6	4221
30 - 34.....	7587	7901	15612	50.6	5583
35 - 39.....	9098	9272	17462	53.1	6924
40 - 44.....	8347	8694	16165	53.8	6101
45 - 49.....	8322	8431	16171	52.1	7257
50 - 54.....	8057	8344	16595	50.3	6098
55 - 59.....	7087	7120	12800	55.6	6912
60 - 64.....	6210	6286	11930	52.7	5825
65 - 69.....	4667	4597	12854	35.8	5076
70 - 74.....	3476	3553	8024	44.3	2733
75.....	2519	2519	6449	39.1	

Enquête sur l'économie de l'exercice dentaire, A.D.C. 1954

L'âge des dentistes à leur graduation n'est pas le même. Pour établir des relations entre le revenu net et le nombre d'années de pratique, on a compilé dans le Tableau No 5 l'âge de la graduation en relation avec la moyenne du revenu net. Les diplômés des années 1939-1943 inclusivement ont eu des revenus nets plus élevés que n'importe quelle autre année de graduation. Les diplômés d'avant 1924 ont eu en 1953 des revenus nets bien inférieurs à ceux des diplômés des années suivantes.

TABLEAU NO 5

Dentistes indépendants

Rapport de l'année de graduation avec le revenu net de 1953

Année de graduation	Moyenne du revenu net
Vides.....	6531
1903.....	4558
1904 - 1908.....	4161
1909 - 1913.....	4943
1914 - 1918.....	6658
1919 - 1923.....	6979
1924 - 1928.....	7966
1929 - 1933.....	8694
1934 - 1938.....	8844
1939 - 1943.....	9453
1944 - 1948.....	8320
1949 - 1953.....	6732

Ebaucette sur l'économie de l'exercice dentaire, A.D.C. 1954

Comme on l'a dit, on a aussi fait en 1945 un relevé sur l'économie de l'exercice dentaire (voir Partie I du rapport). Dans les deux cas, on a utilisé les mêmes méthodes pour amasser les renseignements. Dans le Tableau No 6, on a placé en parallèle, dans

deux colonnes, les chiffres obtenus au cours de l'enquête de 1945 et ceux obtenus pour 1953 pour qu'on puisse les comparer. En 1944, on était en guerre et les 3279 dentistes qui ont fourni des renseignements étaient en pratique privée. En 1953, on estime qu'il y avait 4950 dentistes en pratique privée et 350 employés à temps complet.

TABLEAU NO 6

Revenu total des dentistes du Canada (millions de dollars)

	1944	1953
Nombre de dentistes.....	3,279	4,950
Revenu brut.....	26,547	72,354
Revenu net.....	13,610	37,328
Revenu des salariés.....	844	2,024
Total du revenu net.....	14,454	39,352

Enquête sur l'économie de l'exercice dentaire, A.D.C. 1954

On se rend compte que le total du revenu brut des dentistes en 1953 est environ deux fois et demie plus considérable qu'en 1944 (10 ans).

Cela ne veut dire pas nécessairement que le public a reçu plus de traitements. L'augmentation des revenus représente une augmentation du nombre des traitements, mais on doit aussi songer que les honoraires pour les traitements ont augmenté durant cette période, comme on le verra plus tard dans le rapport.

(Ces renseignements forment la deuxième partie du rapport de l'enquête sur l'économie de l'exercice dentaire-1954. La troisième partie paraîtra prochainement).

Connait-on l'Association dentaire canadienne?

Depuis quelques années, la mode est aux questionnaires. La radio et la télévision nous ont habitué à ces séances de questions soumises par un auditoire invisible et anonyme à un groupe d'experts et d'érudits qui défrichent les réponses à l'aide de jalons qu'ils posent auprès d'un modérateur. Ou encore, certains individus sont invités à s'approcher d'un micro et on leur demande de fournir des renseignements sur tel ou tel problème d'histoire, de géographie, de politique, etc. On a donné à ces programmes toutes les variantes, tantôt mêlant l'auditoire à ces efforts de mémoire, tantôt attribuant des prix fantastiques pour les réponses les plus banales.

S'inspirant sans doute de cette vogue des programmes à questions et réponses, la société dentaire de l'ouest de Toronto consacra récemment une de ses réunions mensuelles à une discussion sur l'organisation de la dentisterie au Canada. On avait pris soin de choisir des questions d'intérêt général susceptibles d'intéresser les membres. On avait remis à l'assistance des copies de ces questions, en la priant d'en demander d'autres qui n'apparaissaient pas sur la liste. Les questions portant toutes sur le fonctionnement de l'Association dentaire canadienne, on avait invité quelques membres bien renseignés sur les rouages de l'Association à être présents pour mettre les choses au point et donner le ton à la discussion.

Ce genre de "panel discussion" (nous ne connaissons pas le terme français correspondant) s'est avéré des plus populaires et a permis à tous ceux qui assistaient à l'assemblée de se renseigner sur l'organisme national qui s'occupe des intérêts des dentistes canadiens.

Voici un spécimen de ces questions:

- 1) Secrétariat de l'Association dentaire canadienne
 - (a) Quelles raisons ont motivé l'achat et l'aménagement d'un nouvel édifice?
 - (b) Comment la transaction a-t-elle été financée?
- 2) Qu'entend-on par membre corporatif?
- 3) Quelle différence y a-t-il entre les relations professionnelles et les relations extérieures?
- 4) Quelle protection un membre de notre profession a-t-il, quand il s'agit de poursuite judiciaire?
- 5) Le système de santé d'Angleterre pourrait-il s'appliquer au Canada?
- 6) Y a-t-il un plan de retraite pour les membres de la profession dentaire, au Canada?
- 7) Bureau des Gouverneurs de l'Association dentaire canadienne
 - (a) Quels en sont les membres?
 - (b) Sont-ils élus ou nommés et pour quelle période de temps?
- 8) Cotisations pour la licence
 - (a) Comment sont-elles fixées?
 - (b) A quelles fins sont-elles dépensées?
- 9) Quelles sources de revenus a l'Association dentaire canadienne? Ou sont ces fonds?

- 10) Journal de l'Association dentaire canadienne
 - (a) Quelles sont ses sources de revenus?
 - (b) Comment établit-on sa politique pour ses éditoriaux?
- 11) Quelle contribution apporte l'Association dentaire canadienne aux recherches dentaires?
- 12) Ai-je voix au chapitre des affaires de la dentisterie canadienne? Comment et quand puis-je exposer mes idées?
- 13) Quelle place occupe la dentisterie canadienne au sein de la dentisterie mondiale?

Ceux qui assistaient à la réunion ont pu se rendre compte que la plupart des membres de l'Association ne connaissent pas beaucoup les buts et le travail de l'organisme dont ils font partie. Et pourtant les dentistes du Canada tout entier devraient être au courant des fonctions de l'organisme qui veille à leurs intérêts.

L'expérience de la West Toronto Dental Society mérite d'être tentée ailleurs et c'est le désir du Comité des Relations extérieures de l'A.D.C. que les sociétés dentaires par tout le Canada inscrivent à leur programme de l'année une soirée du genre.

On pourrait ajouter d'autres questions touchant à l'organisation du Collège des Chirugiens-Dentistes des provinces et donner ainsi plus de couleur locale à la discussion. Les membres ne seront jamais trop renseignés sur les associations qui les représentent et on éviterait ainsi une foule de malentendus et d'incompréhensions, qui la plupart du temps reposent sur une ignorance des bases des questions en litige.

GERARD DE MONTIGNY

L'hypnotisme en art dentaire

par H. CULAND (Lausanne)

Il est des patients qui nous fatiguent davantage en une demi-heure que vingt autres pendant le reste de la journée. Ce sont les patients qui ont peur de tout, non seulement de la fraise, de la seringue à injection ou d'un instrument d'aspect inaccoutumé, mais même de l'innocent miroir ou des inoffensives précelles. Ce sont les patients qui tressautent, se raidissent, suent ou frissonnent au moindre geste du dentiste. Il ne s'agit pas de la crainte commune que l'on arrive à vaincre par l'usage du raisonnement, de la douceur et des nombreux moyens d'analgésie et d'anesthésie dont nous disposons. Il s'agit d'une véritable phobie. Pour ces malheureux, que nous plaignons et redoutons, une séance chez le dentiste est une terrible épreuve nerveuse. Il en est de même du praticien, qui, constatant qu'en l'espace de deux ou trois quarts d'heure, il n'a réussi qu'à approcher la fraise de quelque dix centimètres de la dent à traiter, n'a plus qu'un désir : mettre la clé

sous le paillason et partir en vacances. Ce qui est excellent pour la santé, mais ne résout pas le problème.

Nous avons tous été émerveillés, une fois ou l'autre, par les prouesses des amateurs de foire ou de salon, qui mettent un volontaire en état d'hypnose, et lui percent la joue de part en part avec une aiguille, sans qu'il en résulte la moindre douleur ou le moindre saignement.

Pourquoi donc ne pas utiliser l'hypnotisme en art dentaire, du moins pour ces patients pour lesquels les moyens habituels d'anesthésie ou d'analgésie sont si redoutés, si difficiles à appliquer, voire même insuffisants?

Quelques-uns de nos confrères des U.S.A. ont été séduits par cette tentative. Ils constituent, certes, une petite minorité, mais sont organisés en une société, "*The American Society of Psychosomatic Dentistry*," qui a pour but de faciliter les échanges de connaissances, et d'instruire les adeptes de la méthode. L'un des membres de cet organisme, le D.D.S. *Philip Ament*, de passage récemment en Europe,

fit sur ce sujet une conférence à la *Société Vaudoise des Médecins-dentistes*, à *Lausanne*.

L'hypnotisme fait essentiellement appel à la *suggestion mentale*. Lorsque le dentiste reçoit un patient particulièrement pusillanime et nerveux, plutôt que de se précipiter sur une seringue ou une fraise, il commence volontiers par bavarder gentiment avec lui, comme s'il ne songeait pas le moins du monde à le traiter. Le praticien opère ainsi une *action sédatrice sur un système nerveux hypertendu*, de façon à faciliter l'intervention. Ce procédé simple, qu'utilise tout dentiste soucieux du bien-être de ses patients, est le procédé de base de l'hypnotisme. Il suffit de parler plus longuement, et d'une façon adéquate, pour obtenir une détente de plus en plus complète, suivie finalement du sommeil hypnotique, qui n'est au fond qu'une sorte d'absence, de repos complet, par détachement des contingences pénibles.

Si l'usage de l'hypnotisme a pour avantage premier et apparent de faciliter ou de rendre possible l'intervention dentaire, il a en outre une action particulièrement précise, que ne saurait exercer le meilleur des anesthésiques : *il supprime toute appréhension*, toute tension nerveuse. Or celles-ci peuvent non seulement entraver parfois le traitement, mais encore représentent, physiologiquement, des facteurs nuisibles. Les exemples de perturbations physiologiques d'origine psychique sont faciles à donner. Les stomatites d'origine psychique guérissent rapidement, sans traitement, simplement par suppression de la cause émotionnelle. La tension sanguine peut augmenter sous le coup d'une émotion vive. L'induction d'un anesthésique ne commence pas lorsque l'anesthésiste place le masque sur le visage du patient, mais lorsqu'on informe celui-ci qu'une intervention chirurgicale est nécessaire (*Raginsky, B. B.: Psychosomatic medicine. The American Journal of Medicine, 6 : 857-878, déc. 1948*). En outre, l'attention a été particulièrement attirée sur ces phénomènes par les ré-

cents travaux de *Selye*. Rappelons que le "*Syndrome général d'adaptation*" qu'il décrit, représente la somme des défenses non spécifiques de l'organisme attaqué par un agent offensant quelconque : physique, chimique, nerveux. Il ne faut pas confondre ces réactions de défense, non spécifiques, avec les réactions de défense spécifiques, anticorps, par exemple.

Le "*Syndrome général d'adaptation*" évolue en trois phases :

1. **Réaction d'alarme** : se produit immédiatement après l'action de l'agent offensant.
2. **Phase de résistance** : apparaît plus ou moins rapidement, peut durer quelques heures ou toute la vie. Si la résistance est insuffisante, on arrive à la
3. **Phase d'épuisement** : apparaît lorsque l'organisme a épuisé tout sa capacité d'adaptation.

L'adaptation au monde extérieur étant l'une des plus importantes réactions physiologiques de la vie, on saisit l'importance de ces conceptions pour les sujets émotifs ou nerveux.

N'importe qui peut hypnotiser, pour peu qu'il ait étudié soigneusement la question, et se soit soumis à un entraînement préalable sérieux.

N'importe qui peut être hypnotisé, s'il le veut bien naturellement, hormis les enfants de moins de six ans et les débiles mentaux, car les sujets de ces deux catégories sont incapables d'apporter la collaboration nécessaire à l'induction du sommeil hypnotique.

Les résultats sont variables. Certains patients pourront subir sans autre n'importe quelle intervention, de la préparation de cavité sensible, à l'extraction de la dent. Chez d'autres, l'hypnose ne réalise pas une anesthésie suffisante, mais leur procure un état de relâchement et de bien-être qui leur permet d'accepter facilement une anesthésie complémentaire, quantitativement réduite. Dans les cas favorables, le dentiste peut utiliser l'hypnotisme, non seulement pour rendre agréable à son patient une séance de soins

dentaires, et réaliser fraisage, incisions ou extractions sans douleur, mais également pour favoriser l'accoutumance aux appareils prothétiques, prévenir les réflexes nauséux, tarir une sécrétion salivaire trop abondante, arrêter une hémorragie, remplacer une prémédication, ou supprimer pendant plusieurs semaines, si nécessaire, les douleurs postopératoires.

Y-a-t-il danger pour le patient qui se soumet à l'hypnotisme? Cela peut être le cas lorsqu'il est utilisé sans discernement, simplement pour amuser ou pour faire des tours. Il peut en résulter un affaiblissement de la personnalité par sentiment de dépendance, ainsi qu'une propension au sommeil artificiel. Mais le danger est inexistant s'il est utilisé dans un but dentaire, car alors les conditions suivantes sont remplies:

1. L'hypnotisme est exercé par un praticien capable et de bonne moralité.
2. L'hypnotisme n'est jamais utilisé sans le consentement du patient.

3. Autant que possible, un témoin assiste à la séance.
4. Il n'est jamais question de forces occultes, de spiritisme ou d'influence magique.
5. Le seul but de l'hypnotisme est de permettre ou faciliter le traitement dentaire.

En conclusion, il apparaît que l'hypnotisme puisse rendre de grands services au médecin-dentiste. La condition première est que les lois sanitaires de son pays lui permettent de l'appliquer. La condition seconde est que le praticien ait étudié à fond le procédé, et l'utilise avec sérieux et circonspection. Et seul un médecin-dentiste expérimenté peut l'enseigner, et non un quelconque faiseur de tours. C'est un problème dentaire, qui doit être traité comme tel. D'où l'utilisation, par les Américains, du terme: "hypnodontisme."

Médecine et Hygiène,

1er août, 1954.

A method for testing pulpal response to stimuli using the rat molar

by K. J. PAYNTER, D.D.S., Ph.D. and A. W. S. WOOD, D.D.S., Toronto.

Previous to the work of Mohammed (1952), studies of the reaction of the dental pulp to various filling materials, cavity liners etc., had been based on observations either in humans, or in large laboratory animals such as dogs or monkeys.

Obtaining suitable controls has been a difficult problem in investigations of this type on humans, and the use of large laboratory animals presents problems of cost, housing, care, etc., which makes them far from ideal as test animals. Also the lack of uniformity in tooth size in dogs and other large animals makes it impractical to prepare a series of cavities in which the distance from the base of the cavity to the pulp is constant.

As Mohammed (1952) has pointed out, the rat is in many ways, an excellent experimental animal for use in testing pulpal response to stimuli. Mohammed

(1952), Mohammed and Schour (1953) and Schour and Mohammed (1953), have successfully used the rat incisor for this purpose. More recently a method for using the rat molar has been reported (Maurice and Schour, 1954 A).

The rat molar would appear to be better suited for this type of experiment than the incisor. The molar more closely resembles its human counterpart histologically, anatomically and physiologically, than does the rodent incisor. Also, because of the regularity in tooth size in rats, it was felt that if cavities of the same depth were prepared at the same location on the same teeth in rats of the same strain and of comparable age, weight, etc., then the base of all cavities should be close to constant distance from the pulp. Furthermore, comparable cavities prepared in the same teeth on opposite sides of the mouth of the same animal should provide excellent control.

This study had three purposes: (1) to design and construct equipment with

(Continued on page 147)



FIGURE 1.

The operating table (left) and the microscope-handpiece unit (right).

The operating table: the top of the plywood operating table measured five by fourteen inches and was four inches above the baseboard. A head block, which consisted of a block of wood hollowed out to receive the head and snout of the animal, was fastened to the table top about five inches from one end (A).

A metal vertical column (B) which had a universal joint at the top was mounted in front of the head block. The joint was drilled to receive the handle of a pair of dividers, which could be locked in any desired position by means of a screw through the joint.

The beaks of the dividers were squared off and serrated on their inner surfaces so that they could securely grasp the sides of the upper incisors of the rat.

Two binangle chisels with dulled cut-

ting edges were threaded along their shanks and fastened in units, one on each side of the head block approximately opposite the position of the upper molar teeth when the rat was on the table (C). The units holding the chisels had two thumb screws each, one to advance or retract the chisel, and the other to raise or lower it.

A retractor for the lower jaw was connected to the table posterior to the head block. This retractor also operated by means of a thumb screw so that the lower jaw could be held open any desired distance (D).

Concave mirrors were mounted on swivels, one on each side of the table opposite the head block. These were used to reflect light into the mouth of the animal.

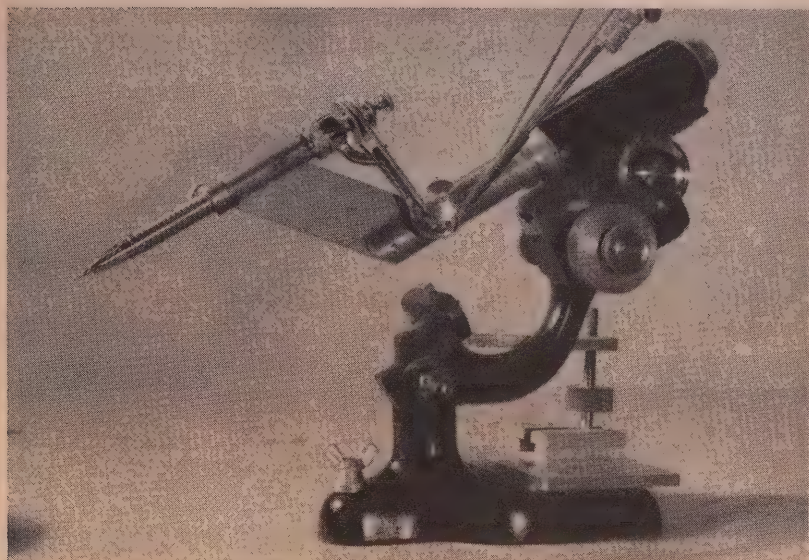


FIGURE 2.
The microscope-handpiece unit.

A high-speed straight dental handpiece was locked in a brass tube mounted parallel to, and above the barrel of a microscope. A large brass ring calibrated in units of three microns was attached to the fine adjustment shaft on the left side of the microscope. The microscope barrel was raised or lowered (thus controlling the vertical position of the tip of the

handpiece) by adjusting a thumb screw on a threaded vertical shaft attached to the bracket which formerly supported the microscope table.

The base of the microscope was drilled to fit snugly over either of two studs fastened to the baseboard on each side of the operating table. A thumb screw held the microscope securely on the stud.

(Continued from page 145)

which cavities could be prepared in the rat molar; (2) to prepare cavities of controlled depth at the same relative location in the upper right and left first molar teeth in the rat; and (3) to confirm whether the rat molar was a suitable tooth for testing pulpal response to stimuli.

EQUIPMENT

The equipment designed and constructed for the purposes outlined above, con-

sisted of two main pieces and certain accessory equipment. The two main units were (a) (Figure 1) an operating table on which the head of the animal could be held immovable, and (b) (Figure 2) a dental handpiece fastened to the barrel of a microscope for precision work. Both units were rigidly secured to a common baseboard.

MATERIALS AND METHODS

Albino rats of the Carworth strain, approximately 120 days old, and weighing

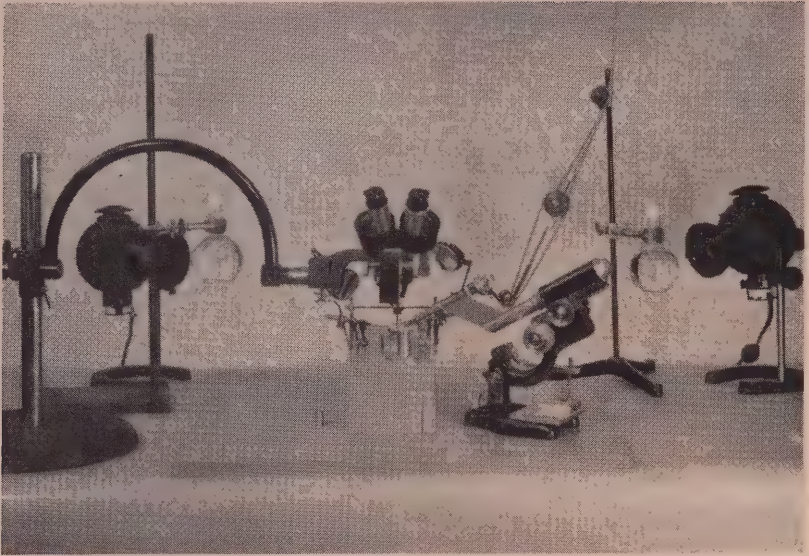


FIGURE 3.

A view of the complete equipment as seen by the operator.

Accessory equipment: Illumination was provided by two microscope lamps placed one on each side, and anterior to, the operating table. Light from the lamps was directed through a water bath and then reflected by the concave mirrors into the mouth of the animal.

All operations were performed with the

aid of a stereoscopic microscope mounted on an adjustable arm. The regular horizontal arm for the microscope mount was replaced by one which described a vertical arc in order to clear the microscope-handpiece unit and allow room for the operator when working from the left side.

about 220 grams were used in this experiment.

Cavities were prepared in the lingual surface of both upper first molars of each animal. The mesial third of this surface is flattened and inclines mesially and occlusally. Cavities were prepared as close as possible in the centre of this area (Figure 4).

Method of Preparing Cavities: Rats were anaesthetized with an intraperitoneal injection of pentobarbital (2.5-3 mg. per 100 gms. body weight).

Each animal was then placed on its back on the operating table with its head resting on the head block (Figure 5). The universal joint holding the clamp for the upper incisors was loosened, and these teeth grasped on their distal surfaces in the beaks of the clamp which tightened. The incisor clamp was then used as a handle to orientate the head of the rat to receive the molar clamps. These were brought forward and downward to contact the buccal surface of the upper teeth in the interproximal space

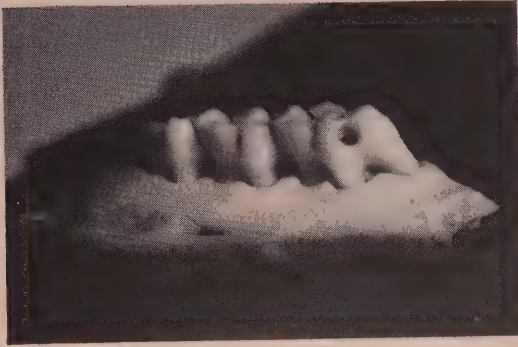


FIGURE 4.

A photograph (approximately 10 times normal) of the lingual surfaces of the upper molar teeth in a rat. A cavity is shown prepared on the lingual surface of the first molar.

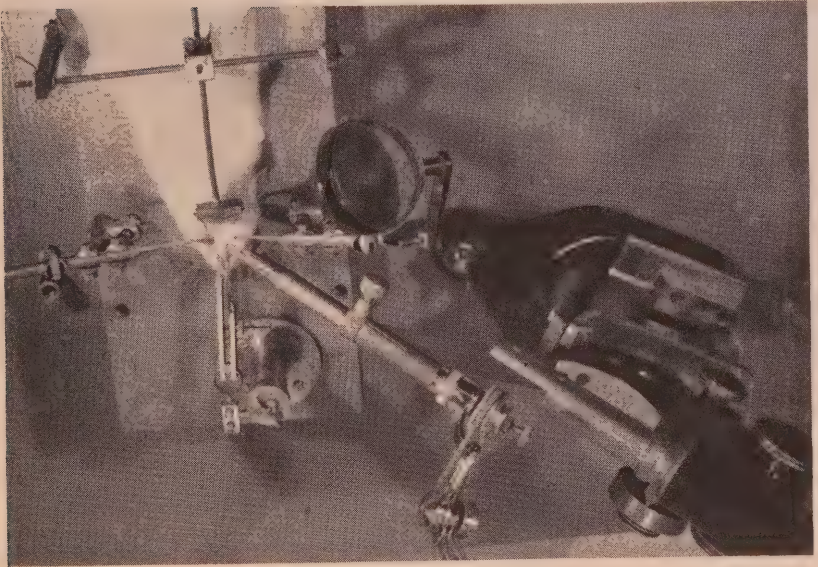


FIGURE 5.

An illustration showing a rat in position on the table. The microscope-handpiece unit is to the right.



FIGURE 6.

A close-up photograph of the mouth of the rat in position for operating. The incisor clamp (B) and molar clamps (C) are in position, and the bur rests against the lingual surface of the first molar tooth.

between the first and second molars (Figure 6) and tightened against the teeth to prevent lateral movement of the head. Tightening the incisor clamp in its universal joint prevented any antero-posterior motion of the head. The rat's head was thus rigidly secured to the operating table. The molar clamps, by pressing against the buccal surface of the first molars, prevented any movement resulting from the slack in the periodontal membrane of the teeth. The lower jaw was retracted and the tongue pulled aside by a suture passed through it near the tip.

The microscope-handpiece unit was placed over the study on the side of the operating table opposite the tooth selected for operation. Light was reflected onto the lingual surface of this tooth. The fine adjustment of the microscope was advanced to its lower limit, and then, using the calibrated dial, was backed up the distance selected for the depth of the cavity. The fine microscope adjustment was not used again until actual cutting of the cavity was begun. Using the coarse adjustment, the handpiece was advanced

and orientated so that the tip of the bur rested at an angle of 90 degrees against the surface of the tooth where the cavity was to be prepared. The thumb screw holding the microscope on the stud was then tightened.

The bur was revolved at a speed of 4500 r.p.m. By turning the fine adjustment down to its lower limit, the bur penetrated the tooth the pre-determined distance. This operation was completed in approximately 4 seconds by one thrust of the bur. The initial cavity was prepared using a Busch No. 4.0 straight handpiece round bur, and was undercut by using a similar bur which had been converted to an inverted cone type by grinding the tip about half-way down the cutting head. This modified bur was held in the fingers, inserted gently into the cavity as far as possible, and revolved against the cavity sides two or three times at a distance from its base. After repeating the operation on the opposite tooth, both cavities were dried with cool air and filled with the selected materials.

Cavities were thus successfully prepared in both first molars of a series of rats to a depth of 300 microns and filled with either silicate cement alone, or with silicate cement and a cavity liner**. Silicate *** from the same mix was used for both cavities. A coin was tossed to determine which tooth was to receive the liner and which was to be filled first.

Sectioning and Staining: Animals were sacrificed with ether at various intervals post-operatively, and the section of the maxilla containing the molar teeth was dissected out and placed in 10% formalin. The block was decalcified using the formic acid-sodium citrate method of Morse (1945) and embedded in paraffin with the occlusal surfaces of the teeth facing the bottom of the paraffin boat.

**The cavity liner used in this experiment is at present being evaluated, and a report on its efficacy will appear subsequently.

***S. S. White silicate cement was used for all fillings. Each mix of silicate contained 1.43 gms. of powder which was mixed for 45 seconds with 0.4 cc. of liquid on a glass slab at 75°F.

The wax block was next trimmed close to the tissue on all sides and surplus wax removed from over the occlusal surfaces of the teeth until these surfaces were clearly visible through the wax. Then, using the occlusal surface of the first molar as a guide, the block was trimmed on each side parallel to a plane through the cavity at right angles to its base and through the long axis of the tooth. The block was then split in halves through the median palatal raphe.

Each block so obtained was reoriented in another paraffin boat so that the flat surface of the block coinciding with the desired plane of section was against the bottom of the boat, and re-embedded. The final block was trimmed in the usual manner and oriented on the microtome so that sections would parallel the base of the block. Sections were cut serially at six microns and stained with hematoxylin and eosin.

To test the efficiency of the method in reproducing the distance from the tooth pulp to the base of the cavity, measurements were made using a ruled eyepiece in the microscope. The shortest distance measured in the serial sections of each tooth was recorded. The figures were statistically analyzed to test for differences between sides and between animals.

RESULTS

TABLE 1

The shortest distance, in microns, between the tooth pulp and the cavity base in both upper first molar teeth in seven rats

Rat Number	Distance in Microns	
	Right	Left
1.....	60	55
2.....	90	255
3.....	195	315
4.....	150	125
5.....	205	170
6.....	260	205
7.....	210	75
Mean.....	167.14	167.14
Range.....	60-260	55-315
Standard Deviation.....	56.5	84

With the use of the equipment described above, it has been possible to prepare

comparable cavities on the mesial third of the lingual surface of both upper first molar teeth in rats. Measurements recorded of the shortest distance between the tooth pulp and the cavity base in seven pairs of teeth are shown in Table 1.

The standard deviation of the differences between sides was also calculated from these figures and is shown in Table II, Plan A. For comparison, this value was also calculated as it would be in two other possible experimental designs, namely (1) the preparation of cavities in both sides but always treating each side the same (Table II, Plan B), and (2) random allotment of single preparations in each animal to either control or experimental (Table II, Plan C).

Histologic sections of teeth prepared and filled according to Plan A, Table II, indicated that the pulp of the rat first molar responds to stimulus or injury from a silicate filling in a manner similar to that previously described for other animals including man.

Photomicrographs of sections through the mesial pulp horn of the upper right and left first molars of a rat are shown in Figure 7 (A and B). The inflammatory reaction evident in the pulp under the cavity which had been filled with silicate cement alone is clearly visible (Figure 7B). This pulp reaction was typical in all animals and was prevented in the opposite tooth by the cavity liner (Figure 7A).

DISCUSSION

Schroff (1952) has recently reviewed the literature on the studies of the response of the dental pulp under various filling materials and cavity liners. He has pointed out that much of the confusion that has arisen in this field of study has been the result of inadequate control in the experiments.

The dental pulp is able to respond to the type of stimulus resulting from the placement of a filling material in a limited manner, i.e., by an inflammatory reaction of varying severity, depending on the nature and severity of the stimulus.

TABLE II

An evaluation of the efficiency of both the method and the experimental design in control of distance from the base of cavity to the pulp

Method of Assigning Cavity to Control or Experimental Group	Standard Deviation of Differences	
	Formula	Observed Value (microns)
Plan A. Random allotment of one side of each animal as control and the other as experimental	$\sqrt{\frac{s^2}{L} + \frac{s^2}{R} - \frac{2r \cdot s \cdot s}{sr \cdot L \cdot R}}$	96
Plan B. Random allotment of animals—treating both sides always the same	$\sqrt{\frac{s^2}{L} + \frac{s^2}{R} + \frac{2r \cdot s \cdot s}{sr \cdot L \cdot R}}$	132
Plan C. Random allotment of single preparations	$\sqrt{2 \left(\frac{W_1 s^2 + W_2 s^2}{W_1 + W_2} \right)^*}$	111

*Weighted average of variances from left sides and right sides.

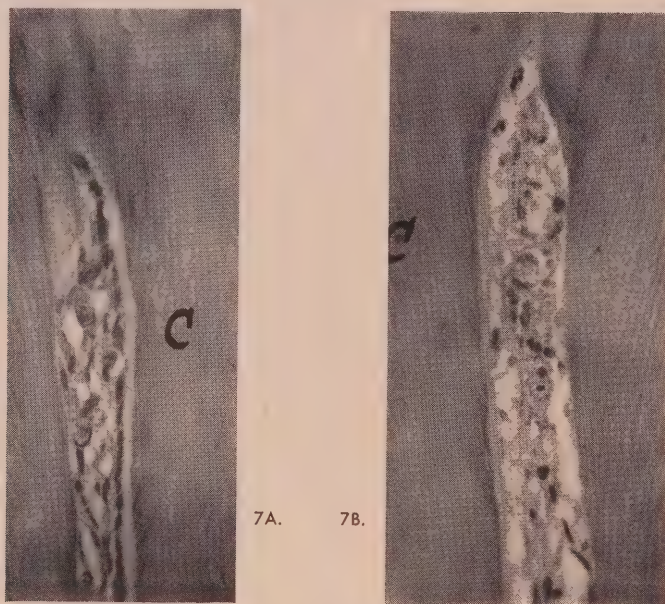


FIGURE 7.

A high-power photomicrograph of the mesial pulp horn of both upper first molar teeth in a rat. Cavities were prepared in both teeth on the side of the pulp horn labelled C, and filled with silicate cement for 48 hours. The cavity in specimen 7A was lined prior to filling. Note the normal-appearing pulp in this specimen as compared with the degenerated pulp in the unlined cavity (7B).

During the course of preparing and filling a cavity several factors besides the filling material itself can illicit a similar response from the pulp. Trauma produced by simply cutting the odontoblastic processes can cause inflammation (Mohammed, 1952). The degree of pulpal injury resulting from cavity preparation is also related to the size of the bur and the pressure applied during its use (i.e., heat) (Henschel, 1944). The magnitude of the effect of trauma from cutting or from heat is related to the thickness of the dentin between the cavity base and the pulp, i.e., the thinner the dentin layer, the greater is the effect of the stimulus (Lisanki and Zander, 1952; Mohammed, 1952). The term "effective depth" of a cavity was suggested by Schorff (1946-A) to designate the thickness of this layer of dentin. In the technique described here the "effective depth" was satisfactorily reproduced in experimental and control teeth.

The measurements of the "effective cavity depth" in this experiment may differ from side to side due to three main factors as follows: (1) differences due to variations in orienting each specimen for sectioning; (2) differences due to inequality in the amount of dentin and enamel and shape of the pulp on each side, and (3) differences due to orientation of the animal's head on the operating table. It was anticipated that these differences would be smaller between opposing teeth of the same animal than between cavities in teeth of different animals, i.e., that the depth of cavities in the same animal would be correlated. Use has been made of this correlation by designing experiments to be carried out with this apparatus according to Plan A, Table II, which minimizes the random variation in cavity depth between control cavities and those receiving the experimental liner. It should be clear that although the methods outlined in Table II differ in efficiency, dependent on the positive correlation between sides, their validity is equal and rests on random assignment of prepared

cavities to control or experimental groups. For the preparations processed to date it is additionally reassuring to note that the mean cavity depth on the right and left sides as measured from the histologic sections not only did not differ significantly but happened to be equal (Table I).

Factors which can irritate the pulp during cavity preparation can be controlled in only one way in an experiment in which the evaluation of either the pulpal reaction to a filling material or the efficiency of a cavity liner is the objective, that is, by duplicating the experimental conditions in both control and experimental teeth. It is considered that this objective has been satisfactorily attained in the present study.

Maurice and Schour (1954 - A) have recently published a short report describing a technique for preparing cavities in rat molar teeth. Their technique may be subject to similar criticism as earlier methods, i.e. lack of control of cavity depth from tooth to tooth. They have also compared results from different animals rather than from different teeth in the same animal.

Maurice and Schour (1954 - B) and Weider, Schour and Mohammed (1954) have demonstrated that the pulp of the rat molar responds to stimulus from trauma or from sodium fluoride (30%) with an inflammatory reaction which may resolve and be followed by secondary dentin formation depending on the severity of the stimulus. A similar reaction under silicate cement fillings was observed in this study.

Rats about 120 days old were found to be best suited for the experiment. At this age wear had not appreciably reduced the coronal height of the molars, and the pulp horns were not obliterated with secondary dentin. The root apex was closed restricting the blood supply to the pulp. There was sufficient tooth structure at the site of cavity preparation that good retention could be achieved.

The dose of anaesthetic was light. Sur-

gical anaesthesia was unnecessary since it was impossible for the animal to move its head even though it could move the rest of its body. It was found that the light anaesthesia prevented animal deaths from this cause.

The method of sectioning outlined above was the result of several trials. Considerable difficulty was experienced in orienting the specimens so that the plane of section consistently passed through the cavity base at right angles to it, and through the pulp horn below it. The individual teeth were too small to allow proper orientation in the wax with any degree of success, and it was found necessary to use the outline of the whole block of the palate containing the molars, to visualize the correct plane for sectioning.

SUMMARY AND CONCLUSIONS

A description of equipment and a method which can be used to enable an operator to prepare comparable cavities on the lingual surface of both upper first molar teeth in the rat has been presented. The use of this equipment and method permits improved control in experiments aimed at the evaluation of the pulpal response to stimuli.

Under a silicate filling the pulp in the rat molar exhibited an inflammatory reaction. The inflammation could be prevented by an experimental liner.

Grateful acknowledgement is made to R. M. Grainger, D.D.S., D.D.P.H., M.Sc. (Dent), Dental Statistician, Department of Medical Statistics, Ontario Department of Health, who did the statistical analysis for this experiment.

Appreciation is also expressed to members of the Department of Oral Histology, University of Illinois, who allowed us to observe the techniques being used there on both rat incisor and molar teeth, prior to any publication by that department.

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The lips of 2,166 soldiers were examined before they were discharged from the army; 996 were returning from Korea, 1,170 from other assignments.

In ten men, lip lesions of hyperkeratotic type were found. All these men had fair complexions and blond to red hair; all the men were returnees from Korea and had worked outdoors. Five of the lesions were premalignant; the other five showed focal keratosis.

Civilian physicians and dentists should be made aware of the possibility of malignant and premalignant lesions of lips in young men, 20 to 30 years of age, especially men with fair complexions and blond to red hair.

Peter F. Laband, D.D.S., and Wm. D. Bumsted, D.D.S., *Oral Surgery, Oral Medicine and Oral Pathology*, January, 1955.

Unilateral ostectomy of mandible for laterognathism ❄

by HAMILTON E. SIMMONS, D.M.D., F.I.C.D.

This case is of particular interest because it involved the rotation of one condyle in the temporomandibular joint to correct the abnormality without markedly changing the position of the other condyle.

The patient, a white girl, age 27, was injured during early childhood by a bad fall. The details of this accident are rather obscure, but the result was a marked deformity of the mandible. The teeth could not be brought into occlusion at any point in a normal bite. The plane of occlusion of the mandible tilted at an angle of about fifteen degrees from the horizontal. The median line of the lower teeth was half an inch to the left in the closed position. When the patient brought her teeth together in this abnormal relationship, the upper right first molar came into contact with the lower right third molar, and these were the only teeth to occlude. The abnormally large space left by the loss of the lower right second bicuspid and first and second molar teeth suggested the possibility of an ostectomy in this region, allowing the left section to be brought into a reasonably normal position by rotating the head of the left condyle in the three different dimensions.

Tomograms of the temporomandibular joints were taken in both sagittal and coronal planes, and the films demonstrated that the head of the condylar process on the left side of the mandible had been rotated externally and tilted on its long axis. There appeared to be a sub-luxation

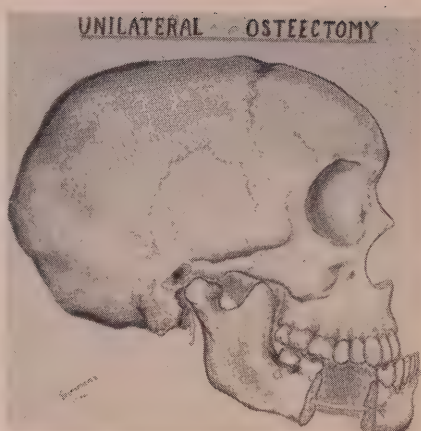
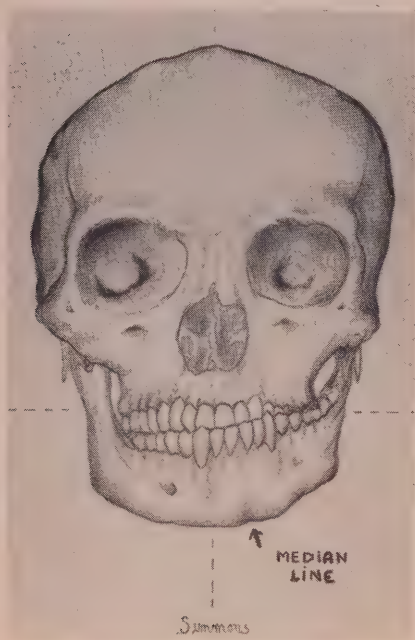
of this articulation, in that the head of the condyle was displaced inferiorly and posteriorly.

Models were made of the patient's teeth and carefully mounted in an articulator. Measurements were then made to determine the necessary amount of bone to be removed, and the necessary changes to be brought about in the alignment of the left section in order to bring it as close to a normal relationship with the maxillae as possible.

It was found that if a section measuring 17 mm along the superior border by 24 mm along the inferior border, were removed from the right side of the mandible, it would allow the left section to be brought over and rotated so that reasonable occlusion could be obtained, and the median line and occlusal plane corrected. This necessitated changing the position of the left condylar head in the joint in three dimensions, involving a lateral rotation of twenty degrees from left to right, a change of fifteen degrees in the long axis in relation to the horizontal plane, and a forward rotation of eight degrees in the perpendicular plane.

This sectioning and rotating was carried out on the plaster models. When the desired relationship was obtained, the models were secured in the dental articulator. Metal cap splints were then constructed in such a way that they could be connected on to the patient's teeth before the operation. The splints were designed so that when the bone was removed and the mandible freed during the course of the operation, the splints could be slipped into a locking position and two

*(A report on the treatment as carried out by the Maxillo-Facial Unit of Shaughnessy Hospital, under the direction of Robert G. Langston, M.D., assisted by Hamilton E. Simmons, D.M.D., F.I.C.D.)



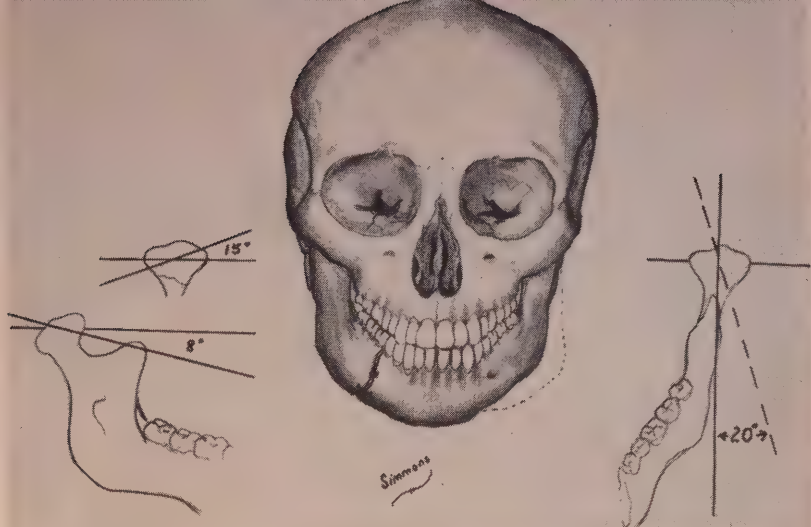
Diagrams showing the condition to be corrected and the plan for its correction.

little bolts inserted to hold them in place. In this way the mandible was brought into position and held there while interosseous wiring at the point of section was completed and suturing and dressing carried out. These metal cap splints held the patient's jaws in position during a fourteen week convalescent period. Feeding was accomplished through spaces provided in the splints. Recovery was rapid and after the first week the patient was able to return to work and resume a normal routine.

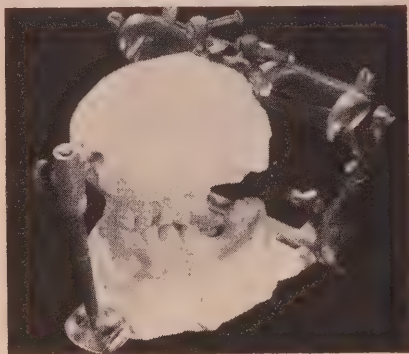
The cap splints were removed and the jaws freed after fourteen weeks of immobilization. When the patient first tried to open her mouth there was acute pain in the left temporomandibular joint as the condyle assumed its new field of excursion. This disappeared entirely in about

three hours. Mild exercising and a gradually increased function with a careful spot grinding of the teeth into contact brought about a reasonably good occlusion. There was no deviation, no trismus, and in three days the patient was masticating normally for the first time in many years. The mandibular nerve had been kept intact and folded into a hollow prepared in the cancellous bone at the point of sectioning, so that there was no anaesthesia of the right lower lip after the operation.

Two years later the patient was re-examined. Her jaws were functioning normally and she suffered no inconvenience as a result of the surgery. Her whole outlook on life had changed, and she was happy and had been able to take a normal place in society.



Showing the actual changes brought about in the position of the left condyle by the ostectomy.



Models showing the relation of the teeth before and after the operation and the amount of bone removed.



The patient before the operation and one year after the operation.

(Photographs by Mr. K. Buckley, Photographic Unit, Shaughnessy Hospital.)

ABSTRACTS

Evaluation of deciduous molars treated by pulpotomy and calcium hydroxide

by WILLIAM F. VIA, Jr., D.D.S., M.S., Detroit.

The Journal of the American Dental Association, Jan. 1955.

Treatment by pulpotomy and capping of the remaining pulp tissue with calcium hydroxide has been demonstrated to be the method most likely to preserve the health and function of deciduous and young permanent teeth with exposed vital pulps. An investigation has been undertaken to evaluate this treatment through a study of the postoperative roentgenograms of a number of treated teeth.

Brown, in 1947, reported a clinical study of 92 teeth on which pulpotomies had been performed and to which calcium hydroxide had been applied. The technique used to perform pulpotomies in Brown's study and the present investigation is as follows:

1. The tooth was anesthetized in the usual manner, except when it was found necessary to reinforce the anesthetic by injection directly into the pulp chamber.
2. The tooth was isolated by means of a rubber dam.
3. The tooth and the region of rubber dam surrounding it was swabbed with tincture of mercocresols. The working points and cotton swabs were sterilized.
4. The tooth was opened wide to expose the entire roof of the pulp chamber, a sterile bur was selected and the contents of the pulp chamber were removed.

5. The pulp chamber was swabbed with a cotton pellet having a trace of phenol on its surface.
6. Occasionally it was necessary to control hemorrhage by placing a cotton pellet saturated with phenylephrine (1 per cent) or epinephrine (1:500) over the floor of the pulp chamber.
7. The amputation stumps were covered with a paste made of calcium hydroxide and sterile water.
8. A cement base and metallic filling usually were placed over the calcium hydroxide immediately.

Brown found that the treatment was successful in 90.2 per cent of the cases, with a standard error of 3.1 per cent. His investigation was based on a sample of deciduous and permanent maxillary and mandibular teeth. There were 20 permanent teeth and 72 deciduous teeth, of which 25 were in the upper arch. The treated teeth were observed from 4 months to 47 months.

The procedure followed in the present investigation was to select a sample from the 800 records of pulpotomies on file at the children's clinic of the School of Dentistry of the University of Michigan. All of these teeth were treated with the same technique. The sample was limited to deciduous molars in the mandibular arch, and to only those treated teeth in which postoperative roentgenograms were secured after sufficient time had elapsed to determine whether the treatment could be judged a success or a failure.

The following table shows the factors influencing outcome of treatment, number of teeth treated and percentage of success.

	Successes	Failures	Total Cases	Percentage of success
Total teeth	32	71	103	31
Preoperative reaction				
Present	9	19	28	32
Absent	23	51	74	31
No report	0	1	1	
Anesthetic injected into pulp				
Present	7	24	31	22
Absent	24	47	71	33
No report	1	0	1	
Amount of pulp exposed				
Small	22	52	74	29
Large	7	19	26	27
No report	3	0	3	
Internal resorption				
Present	0	48	48	
Absent	24	14	38	
Repaired	8	0	8	
No report	0	9	9	
Loss of peri-radicular bone*				
Present	0	48	48	
Absent	32	14	46	
No report	0	9	9	

*Abnormal root resorption included.

The reasons for the high rate of failure in this sample are left to conjecture, since none of the factors thought to influence the outcome can be proved statistically

to have any effect on success or failure.

It is possible that the condition of the pulp at the time of operation with respect to its inherent resistance and the amount of damage suffered from irritating agents produced by carious lesions is the major factor that determines whether the treatment will be successful or will fail. One may conclude that the most important factor in increasing the chance of success is the determination of the exact condition of the pulp tissue at the time of the operation. Such a determination, however, is almost impossible to accomplish clinically. Brown found no significant correlation between the clinical signs and factors of preoperative history, and none was found in this present study. The foregoing statement should not be construed to mean that clinical signs are not valuable factors in the selection of teeth for treatment by pulpotomy. Many teeth are eliminated from treatment on the basis of the clinical signs of pulpal disease.

An Appliance for Regaining and Maintaining First Molar Spaces

by P. W. HERRICK, D.D.S.

The Journal of Prosthetic Dentistry, January 1955.

The loss of one tooth decreases masticating efficiency, and, as time goes on, the inefficiency increases unless restorative and preventive measures are employed. This inefficiency is represented by the drifting of the teeth toward the edentulous space, the opening of adjacent contact points, extruding of the opposing tooth, and finally, the loss of vertical dimension presenting predisposition to a local periodontal pathosis.

The appliance to be described was conceived with the idea of repositioning teeth that have tipped and drifted into an edentulous space, partially closing it. It is of greatest value for the patient who has

lost the lower first molar early and has had no subsequent treatment. If the drifted teeth are moved to a more normal position, a bridge can be fabricated to conform to established biologic principles. A stone cast is made from a full impression. The clasps and activator loops are made of 0.025 orthodontic wire. Two pieces of the wire about 3½ or 4 inches in length (long enough to make one side of each clasp and the large U-shaped spring activator) are cut.

One end of a piece of this wire is formed into half a circumferential clasp that fits against the buccal surface of the anterior abutment tooth. The wire is then bent to cross the ridge toward the palate or lingual side of the ridge close to the distal surface of the anterior abutment tooth. It is extended toward the hard palate or lingual side of the ridge far enough to form a U-shaped end. The wire is then bent back across the ridge

close to the mesial surface of the posterior abutment tooth, and the buccal half of the circumferential clasp for the posterior abutment tooth is formed. The unused portion of the wire is cut off, and the buccal portions of the wire are adapted into the desirable undercuts on the abutment teeth.

The second piece of the orthodontic wire is used in the same manner to form the opposite portion of the clasps and activator. The lingual portion of the circumferential clasp is formed on the lingual surface of the anterior abutment tooth. The wire is bent across the ridge close to the distal surface of the tooth and extended toward the buccal side of the ridge to form the buccal portion of the U-shaped activator. The wire is then extended toward the lingual, and the lingual portion of the circumferential clasp for the distal abutment tooth is formed. The wire is adapted into the desired undercuts on the lingual side of both teeth.

The loose wires are removed and the edentulous area is painted with a tin-foil substitute. The wires are put back in place and held 1.5 to 2 mm. off the cast by means of sticky wax. To maintain this

space, portions of a paper matchstick are placed between the U-shaped loops of the wire and the cast. Wax is placed around the buccal and lingual clasp arms and at the ends of the wire loops.

Enough self-polymerizing resin material is mixed to fill the edentulous area to the height of the occlusal surfaces of the teeth. This material is placed so that it engages all of the two wires except those portions covered by the sticky wax. At the end of the curing time, the sticky wax is softened and removed. At this stage, the appliance is a space maintainer. To make activation, a slice is cut entirely through the acrylic portion of the appliance from the occlusal toward the gingival side, and the U-shaped wire loop is bent with pliers at the bottom of the "U" on each side to open the loop. The amount of the bend will determine the amount of force to be applied.

When conditions to as near normal as possible have been re-established and a holding time is desirable, the space that was opened up by the slice through the acrylic and by activation is filled with acrylic resin to form a space maintainer to hold the teeth in their new positions.

The Newburgh-Kingston Caries Fluorine Study VII. Correlation of Ingested Water Fluorides to Dentofacial Development

by DAVID B. AST, D.D.S., M.P.H., Albany, N.Y.

American Journal of Orthodontics, January 1955

An interim analysis is presented of the caries prophylactic effects of ingested water fluoride in children aged 5 to 12 years in Newburgh, as compared with children of the same ages in fluoride-free Kingston. These data show that among the 6- to 9-year-old children there are 55 per cent less DMF teeth per 100 erupted permanent teeth, as compared with the same-aged children in Kingston. Among

the 10- to 12-year-old children there is a difference of 43 per cent.

In the deciduous dentition, the reduction in def teeth among Newburgh children ranged from 59 per cent in the 5-year-old, to 12 per cent in the 8-year-old children, as compared with those in Kingston.

The total dental caries experience for both the permanent and deciduous dentitions show that for each age level from 6 to 12 years, the Newburgh children experience dental decay in approximately 2 teeth less than the Kingston children.

Among the 5- to 7-year-old children there were approximately twice as many with all of their deciduous canines and deciduous molars present and caries-free as were noted in Kingston.

PUBLIC RELATIONS



Public Relations has been defined as "Good Performance, Publicly Appreciated". In an effort to stimulate an interest in the many facets of "Good Performance" the Public Relations Committee has prepared several short articles which, commencing this month, will continue for several issues to come.

EDITOR.

Are You Practising Dentistry?

We are dentists, having received upon graduation from a university the degree of Doctor of Dental Surgery. The title of doctor is the highest degree that a university can confer on anyone recognized as a master in some special field of study.

To be a dental surgeon (and dental physician) the state requires that we must possess certain qualifications basic to the practice of that profession. Therefore as undergraduates it was necessary that we obtain instruction in the basic medical-dental, or biological sciences, and today the prospective dentist receives biologic training similar to a student of medicine. Dentistry is a health service, a member of the healing arts, and contributes to the health, comfort, and appearance of our fellow-men. It is necessary for us to have a basic understanding of disease entities in general, and oral diseases in particular. We must recognize the relationship of oral conditions to systemic problems and vice versa, realizing as Sir William Osler did, that the mouth may be a biologic mirror of a patient's general health.

Occasionally some of us are inclined, in the routine of a busy dental practice, to forget that the oral cavity with its contained structures is governed by the same physico-chemical laws and physiologic principles as the rest of the body, and is supplied by nerve, vascular and lymphatic systems common to the entire human organism. And because, through neces-

sity, a large portion of the practice of dentistry is directed along mechanical procedures, some of us tend to forget the biological aspects so necessary to correct diagnosis, treatment, and prevention. We often lose the broad scope of our profession. Inevitably it will then follow that the mechanics of dentistry is foremost in the minds of our patients and the public at large.

The technical and material aspects are further accentuated because some dentists discuss treatment plans at great lengths in terms of expensive, flesh-coloured acrylic, and copper, silver and gold restorations. Such a discussion, if necessary at all, should be only secondary and incidental to the one which is fundamental, that is the cause of the patient's dental ill health, how it may be remedied now, how to prevent a recurrence in the future, and what effect it has or will have on the general health of the patient. The importance of dentistry as a health profession will be judged by the public as we present it in our offices. The mechanics of dentistry has reached such a level of perfection today, that were no further improvements developed our patients would not suffer.

Every effort must be made by individual and cooperative research to unravel the cause of dental disease, and to apply our present-day biological knowledge to treatment of dental problems in a rational manner, striving for prevention wherever possible.

CONVENTION SUPPLEMENT



JOINT MEETING

THE CANADIAN DENTAL ASSOCIATION
AND
THE ONTARIO DENTAL ASSOCIATION

MAY 15, 16, 17, 18 — 1955

"Dental Progress Through Applied Research"



ROYAL YORK HOTEL

TORONTO

NATHAN PHILLIPS O.C.

MAYOR

F.C. HAMILTON, F.C.I.S.

EXECUTIVE ASSISTANT



TORONTO

January 13, 1955.

President, Officers and Members,
The Canadian Dental Association.

Gentlemen:-

I understand that the Canadian Dental Association and the Ontario Dental Association are holding a joint convention at the Royal York Hotel, Toronto, from May 16th to 19th inclusive, 1955, and I am writing to extend to you a cordial invitation to come to Toronto.

The Government of the City, and our citizens in general, will have pleasure in welcoming you, and as this City acts as host to hundreds of delegates from outside points, we will be glad to have the opportunity of doing everything possible to make your visit a most enjoyable one.

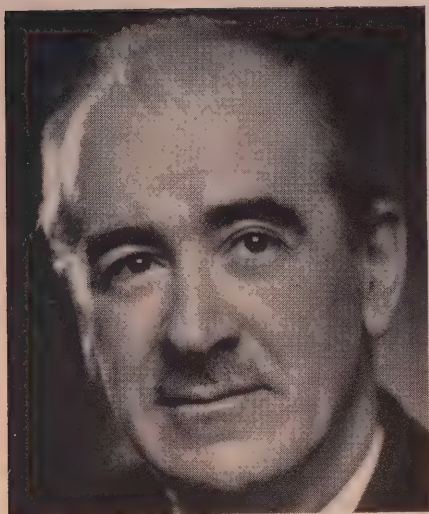
Toronto is now called the "Incomparable Convention City" and has earned the right to that title. Motivated by a spirit of hospitality, our people gladly welcome visitors from all over the Dominion of Canada, the United States, and elsewhere.

There are to be found unexcelled facilities for the holding of your convention, and I know that if you attend, you will derive much benefit through fraternizing with your dental colleagues.

Hoping to have the pleasure of greeting you at this convention, I am,

Yours sincerely,

MAYOR.



Dr. P. G. Anderson
Photo—Ashley & Crippen

Many of us have had an opportunity to witness the C.D.A. - O.D.A. convention at work. If only every Canadian dentist could know the thought and effort that is going into the plans that have been and are still being made for this joint meeting, in order to ensure a completely balanced programme in all its aspects, there would be a desire on the part of every dentist to attend.

It is my privilege on behalf of the Board of Governors of the Canadian Dental Association to extend to all dentists and their wives, a sincere invitation to share in the culmination of the convention committees' efforts at the meeting in Ontario's capital, May 15th-18th.

P. G. ANDERSON,
President, C.D.A.



Dr. L. R. Braden
Photo—Newton Associates

A warm invitation is extended to all members of the Dental profession to be present at an occasion that will be long remembered. An occasion when the observant chaps from the remote areas may meet and compare thoughts with those from the larger centres. Not only an occasion that will be rich in Dental findings but much merry making has been planned by those who have a reputation for the best in fun and frolic.

L. R. BRADEN,
President, O.D.A.

PROGRAMME

SUNDAY, MAY 15, 1955

- | | | |
|-------------------|--------------------------------|----------------------|
| 2.00- 5:00 P.M. — | Registration | Convention Floor |
| - 8:45 P.M. — | Musical-Opera Miniatures | Concert Hall |
| - 9:45 P.M. — | Art Exhibit Open | Convention Mezzanine |

MONDAY, MAY 16, 1955

- | | | |
|-------------------|---|----------------------|
| - 8:30 A.M. — | Dental Public Health Breakfast
Speaker: Dr. Gordon Bates,
General Director, Health
League of Canada
Registration | Tudor Room |
| - 9:00 A.M. — | Art Exhibit Open | Convention Mezzanine |
| | Commercial Exhibits | Exhibit Hall |
| 9:30-11:30 A.M. — | Scientific Motion Pictures | P.D.R. No. 10 |
| -10:30 A.M. — | Ontario Dental Association
Meeting | Ballroom |
| -11:15 A.M. — | Dentists' Legal Protective
Association | Ballroom |
| -12:15 P.M. — | Canadian Dental Association
Luncheon | Concert Hall |
| | Speaker: Dr. P. G. Anderson | |
| - 2:15 P.M. — | Essay Programme | Ballroom |
| | Dr. J. F. Volker | |
| - 3:00 P.M. — | Dr. R. R. McIntyre | |
| - 3:45 P.M. — | Dr. H. K. Box | |
| - 6:00 P.M. — | Class and Fraternity Dinners | |

I N B R I E F

TUESDAY, MAY 17, 1955

- 8:30 A.M. — Registration Convention Floor
- 9:00 A.M. — Art Exhibit Open Convention Mezzanine
- Commercial Exhibits Exhibit Hall
- 9:30-11:30 A.M. — Scientific Motion Pictures P.D.R. No. 10
- 9:30-11:45 A.M. — Group Clinics (see detailed listing)
- 11:30 A.M. — O.D.A. Elections Convention Floor
- 12:15 P.M. — Ontario Dental Association
 Luncheon Concert Hall
 Speaker:
- 2:15 P.M. — Eight 12-minute Presentations Ballroom
 Moderator: Dean Roy G. Ellis
- 6:30- 7:30 P.M. — Cocktail and Social Hour Ballroom
- 7:30 P.M. — Dinner and Presidents' Ball Concert Hall

WEDNESDAY, MAY 18, 1955

- 9:00 A.M. — Art Exhibit Open Convention Mezzanine
- Commercial Exhibits Exhibit Hall
- 9:30-11:30 A.M. — Scientific Motion Pictures P.D.R. No. 10
- 9:30-11:45 A.M. — Group Clinics (see detailed listing)
 No scheduled Luncheon
- 2:15 P.M. — Table Clinics (see detailed listing)

ESSAYISTS AND



"RECENT DEVELOPMENTS IN THE CONCEPT OF ORAL SEPSIS"

Harold Keith Box, D.D.S., Ph.D., Toronto, Ontario.

Photo — J. Kennedy

This essay will be presented by Dr. Keith Box.

Synopsis: The importance of oral sepsis is not sufficiently stressed today by the dental and medical professions. Sources of oral sepsis are generally understood to include gingival and periodontal diseases, periapical abscesses, suppurative and gangrenous dental pulps, advanced dental caries and post-extraction regions of infection. A factor commonly observed in practice and ordinarily overlooked as a source of oral sepsis is habitual uncleanness of the mouth. It is now known that hidden septic foci which are difficult or impossible to detect clinically are frequently present. These phases of the problem will be discussed in this presentation.

Biography: Dr. Box was graduated from the University of Toronto in 1914. Received his Ph.D. degree in 1920. Has been Research Professor of Periodontology since 1927 at the Faculty of Dentistry, U. of T. Dr. Box has been the recipient of countless honours and prizes, has published approximately sixty papers with the major field of investigation being dental pathology.

Place: Ballroom

Time: Mon. May 16—3:45 p.m.



"SOME INDICATIONS OF EARLY CAUSES OF MALOCCLUSION"

The Grieve Memorial Lecture.

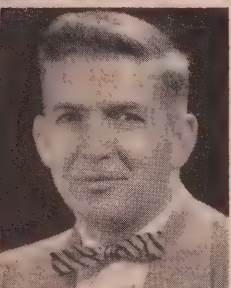
Reybörn R. McIntyre, D.D.S., F.I.C.D., Calgary, Alberta.

Synopsis: Orthodontics is a specialized branch of dentistry which has made marked progress in the last twenty-five years. In the early history of this specialty, many men devoted their efforts to the correction of dental deformities, and irregularities of the teeth. With the passage of time, accumulated knowledge, and appliance development, a marked change in concept has occurred, and a considerable number of those engaged in this specialty are now devoting much of their efforts in the "Preventive Field". This effort is considerably aided by more time being devoted in the various dental schools of Canada to teaching this important and rapidly developing phase of dentistry.

Biography: Dr. R. R. McIntyre graduated from the Royal College of Dental Surgeons of Ontario in 1922. He is Honorary Professor of Orthodontics at the University of Alberta, a Past Chairman of the Orthodontics Section of the C.D.A., a Past President of the Alberta Dental Association, and President-Elect of the Canadian Dental Association.

Place: Ballroom

Time: Mon. May 16—3:00 p.m.



"RECENT ADVANCES IN OUR KNOWLEDGE OF THE RELATIONSHIP OF DIET TO DENTAL CARIES"

J. F. Volker, D.D.S., A.B., M.S., Ph.D., Birmingham, Alabama. Photo — Tom McGuire

Synopsis: The ability of carbohydrates to produce tooth decay depends on their physical nature rather than the total amount consumed. Comparable quantities of carbohydrates in the form of solutions, hard candies, chewy confections, etc., have been fed to human subjects and marked differences in clearance time have been noted. It has been shown that experimental subjects consuming great quantities of fermentable carbohydrates in liquid form have little or no increase in dental caries while those consuming lesser amounts of slow clearing carbohydrates have developed severe dental caries. The significance of these studies in the intelligent planning of dental caries control by dietary therapy will be presented.

Biography: Dr. Volker graduated from Indiana University School of Dentistry in 1936. Subsequent graduate studies led to the degree of A.B. in the University of Rochester in 1938, M.S., in biochemistry in 1939, and Ph.D. in biochemistry and nutrition in 1941. In 1948 Dr. Volker became chairman of the new University of Alabama School of Dentistry. He belongs to many scientific organizations, including the Society for Experimental Biology and Medicine, American Chemical Society, and the International Association for Dental Research.

Place: Ballroom

Time: Mon. May 16—2:15 p.m.



"GOLD INLAYS, CROWNS AND BRIDGE RETAINERS"

Winston C. Bushell, D.D.S., Montreal, Quebec

Photo — Nakash

Synopsis: This Clinic is intended for those General Practitioners who are dissatisfied with their inlay work and desire to improve it. A brief attempt will be made to evaluate the most commonly used inlay techniques, all of which have their place. Various suggestions will be made, calculated to improve the results, whatever your chosen method may be.

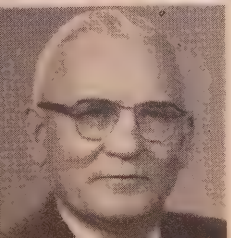
The last and largest part of the presentation will be on The Hydro-Colloid Technique, showing where it shines above all others in certain phases of our work and why we cannot afford to overlook it.

Biography: Dr. Bushell graduated from McGill University in 1924, and in 1932 he became a member of The Faculty. He is at present chairman of the Department of Fixed Partial Prosthesis. Dr. Bushell is a past president of the Montreal Dental Club, a member of the American Academy of Restorative Dentistry, an Honorary Member of the American Dental Society of Europe, and a Fellow of the International College of Dentists.

Place: P.D.R. #6.

Time: Tues. May 17—9:30 a.m.

Wed. May 18—9:30 a.m.



"THE WHYS AND WHEREFORES OF LOWER DENTURE TECHNIQUE"

Howard J. Merkeley, D.D.S., M.D.S., Winnipeg, Manitoba.

Synopsis: The form, location, action and importance to us of the masticatory muscles, both essential and accessory, will be discussed and evaluated by use of lantern slides of painted dissections, and of casts. Based on this, a logical lower denture procedure will be presented stressing also the application of practical psychology.

Biography: Dr. Howard J. Merkeley graduated from the Royal College of Dental Surgeons of Ontario in 1911, and received his M.D.S. in 1916. He is President of the National Dental Examining Board; Past President of the C.D.A., of the Western Canada Dental Society, and of the Winnipeg Dental Society; and a Fellow of the American College of Dentists.

Place: P.D.R. #8.

Time: Tues. May 17—9:30 & 10:45 a.m.

Wed. May 18—9:30 & 10:45 a.m.

GROUP CLINICIANS

"CLINICAL FACTORS IN THE USE OF SILVER AMALGAM"

E. Carl Miller, D.D.S., F.A.C.D., Cleveland, Ohio.

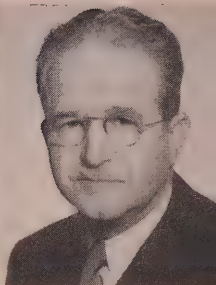
Synopsis: The clinic will consider cavity preparation, pulpal protection, use of the rubber dam, correct management of amalgam, construction of an unyielding matrix, correct ratio of mercury and alloy, complete amalgamation, mercury expression, the method of condensing a homogeneous filling. As well, the following will be discussed: factors controlling strength, volume changes, and corrosion; selection of alloys, polishing and finishing restorations.

Biography: Dr. E. Carl Miller graduated from the Dental School of Western Reserve University in 1923. For many years he has continually studied the clinical aspects of amalgam. Dr. Miller is President-Elect of the Cleveland Dental Society, Past President of the Ohio Unit of the American Society of Dentistry for Children, a Fellow of the American College of Dentists, and he is active in the materials section of the International Association for Dental Research.

Place: Library

Time: Tues. May 17—10:45 a.m.

Wed. May 18—10:45 a.m.



"ROENTGENOLOGICAL DIFFERENTIAL DIAGNOSIS FOR THE GENERAL PRACTITIONER"

George A. Morgan, D.D.S., Toronto, Ontario.

Synopsis: This clinic designed for the general practitioner will illustrate the various differential diagnostic problems as they occur in the mouth and correlate the conclusions with the surgical procedure.

Problems will be illustrated with x-rays and coloured slides, the surgical procedures with coloured motion pictures.

Biography: Dr. George A. Morgan graduated from the University of Toronto in 1930, and received post-graduate training in Oral Surgery at the Mayo Clinic from 1931-34. Dr. Morgan is a Past President of the Ontario Society of Oral Surgeons, and a member of the American Society of Oral Surgeons and of the Great Lakes Society of Oral Surgeons.

Place: P.D.R. #2.

Time: Tues. May 17—9:30 a.m.

Wed. May 18—9:30 a.m.



"DRUG THERAPY IN THE CONTROL OF DENTAL PAIN AND APPREHENSION"

Floyd D. Ostrander, A.B., D.D.S., M.S., Ann Arbor, Michigan.

Synopsis: Much can be done for the control of pain and apprehension by non-therapeutic measures. However, no dentist can provide the maximum possible comfort to his patient without the rational use of drugs.

This clinic will cover drugs for premedication of the apprehensive patient including the barbiturate group, meperidine, and mephensin. The local anesthetics will be discussed with particular emphasis on the newer members of this group. Drugs for the control of mild to moderately severe and severe postoperative pain will be reviewed along with dispensing and prescribing suggestions.

Biography: Dr. Ostrander graduated from the University of Michigan in 1934, and has been a member of the Faculty of the School of Dentistry since that year. In 1941 he obtained his M.S. He is at present Professor of Dentistry and is in charge of the teaching of dental pharmacology and therapeutics. Dr. Ostrander has been a member of the A.D.A. Council on Dental Therapeutics since 1942; he is Editor of the Journal of the Michigan State Dental Association, and a Past President of the American Association of Endodontists.

Place: Parlour B
P.D.R. #9

Time: Tues. May 17—10:45 a.m.

Wed. May 18—10:45 a.m.



"ORTHODONTIC PROBLEMS AS RELATED TO THE GENERAL PRACTITIONER"

Aaron L. Posen, D.D.S., Toronto, Ontario.

Synopsis: This will be an illustrated discussion of problems confronting the general practitioner in his daily practice. The subject will be covered under the following headings: a) normal occlusion; b) deviations from the normal; c) specific treatment. In addition the recognition of malocclusions caused by some habits will be discussed. Stress will be laid on those cases which the general practitioner can readily treat in his own office.

Biography: Dr. A. L. Posen graduated from the University of Toronto in 1942, and in 1949 took the course in Orthodontics at the University of Illinois. Dr. Posen joined the staff of the University of Toronto in 1952, and is now an Associate in Orthodontics, as well as conducting an Orthodontic practice in Toronto.

Place: P.D.R. #2.

Time: Tues. May 17—10:45 a.m.

Wed. May 18—10:45 a.m.



"THE PARTIAL DENTURE AS A MEANS OF MAINTAINING ORAL HEALTH"

Clyde H. Schuyler, D.D.S., F.A.C.D., New York, N.Y.

Photo — Master

Synopsis: The removable partial denture properly planned may be a factor in prolonging the period of usefulness of the remaining natural teeth. If not properly planned, it may contribute to the early loss of the remaining natural teeth and the alveolar supporting tissue.

The removable partial denture, properly designed and constructed, may give a greater degree of comfort, a more efficient service in function and a longer period of usefulness than the full denture. The true value of the removable partial denture as a health service has been seriously discredited due to negligent planning.

Biography: Dr. Clyde H. Schuyler graduated from the University of Pittsburgh in 1916. He is a Fellow of the American College of Dentists, and of the Academy of Restorative Dentistry; President of the Academy of Denture Prosthetics; and Past President of the First District Dental Society, New York City. Dr. Schuyler was Professor in the Prosthetic Department, New York University Dental College, from 1931-42.

Place: York Room

Time: Tues. May 17—9:30 & 10:45 a.m.

Wed. May 18—9:30 & 10:45 a.m.





"THE ADAPTATION OF MODERN INSTRUMENTS AND INCREASED OPERATING SPEEDS TO RESTORATIVE PROCEDURES"

Henry M. Tanner, B.S., D.D.S., Bethesda, Maryland.

Synopsis: Discussion of amalgam, inlay, and crown preparations, considering their indications, failures, and proper design. Presentation of techniques for the improved cavity preparations facilitated by the proper applications of diamond instruments, tungsten carbide burs and increased operating speeds.

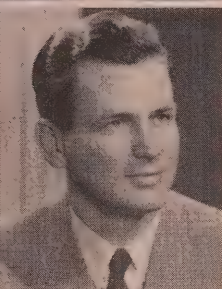
Design, application and care of diamond instruments and tungsten carbide burs. Theories, indications and applications of increased operating speeds. Conversion and maintenance of equipment.

Biography: Dr. Tanner received his B.S. and D.D.S. degrees from the University of Southern California. He is at present on leave of absence as an Associate Professor from the School of Dentistry, University of Southern California, due to his present status as an Instructor at the U.S. Naval Dental School at Bethesda. Dr. Tanner was the 1955 Chairman of the Operative Section and is 1956 Chairman of the Projected Clinic Section of the A.D.A.

Place: P.D.R. #7

Time: Tues. May 17—9:30 a.m.

Wed. May 18—9:30 a.m.



"ORAL SURGERY OF INTEREST TO THE GENERAL PRACTITIONER, WITH SPECIAL REFERENCE TO JAW FRACTURES"

Edward C. Thompson, D.D.S., F.A.C.D., Urbana, Illinois.

Synopsis: This presentation will include a discussion of the management of surgery for removal of teeth and complications attendant thereto. Certain fairly common diseases of the mouth and their treatment will also be considered. The responsibility of the general dentist in regard to the diagnosis and treatment of oral malignancy will be outlined. The lecture will be illustrated by means of Kodachrome slides.

Biography: Dr. Edward C. Thompson is Chief of Oral Surgery at the Carle Foundation and Carle Memorial Hospital, Urbana, Illinois. He is a diplomate of the American Board of Oral Surgery; a member of the American Society of Oral Surgeons, and of the Chicago Society of Oral Surgeons; a Fellow in the American College of Dentists; and currently chairman of the Committee on Anesthesiology of the American Society of Oral Surgeons.

Place: Library

Time: Tues. May 17—9:30 a.m.

Wed. May 18—9:30 a.m.



"ENDODONTIC SERVICE IN A MINIMUM OF APPOINTMENTS"

Vincent Tremblay, D.D.S., Montreal, Quebec.

Photo—Adolphe

Synopsis: The clinic will cover a rapid and effective technique of treating pulp involved teeth. The selection of cases, mechanical preparation of the canal, and sterilization with new and effective drugs will be discussed. Acute cases will be brought under control in a few sittings by adequate drainage and the use of antibiotics. The use of ionophoresis and dynamic currents in Endodontics will be evaluated and judged. Accidental fractures to young incisors, with the restoration, will be explained.

Biography: Dr. Vincent Tremblay graduated from the University of Montreal, and received post-graduate training in Operative Dentistry and Endodontics at the University of Michigan. He is Professor of Endodontics at the Dental Faculty of the University of Montreal. Dr. Tremblay is President of the Montreal Endodontia Society, and Second Vice-President of La Société Dentaire de Montreal. His practice is limited to Endodontics.

Place: Parlour B
P.D.R. #9

Time: Tues. May 17—9:30 a.m.

Wed. May 18—9:30 a.m.



"WEAR OF THE TEETH AFFECTS YOUR PRACTICE"

Charles H. M. Williams, D.D.S., B.Sc.D., Toronto, Ontario.

Photo—Randolph Macdonald

Synopsis: Wear of the teeth may be evidence of normal or abnormal processes. It affects:

1. Development of the jaws and arrangement of the teeth.
2. Temporo-mandibular joint function.
3. Functional efficiency of teeth.
4. Facial proportion.

A practical application concerning each of the above considerations will be supplied. Most of the opinions will be supported by evidence developed during research projects.

Biography: Dr. C. H. M. Williams graduated from the University of Toronto in 1927, and in 1928 obtained his B.Sc.D. He has been on the staff of the Faculty of Dentistry, University of Toronto, since 1928, and is at present Associate Professor of Periodontics.

Place: P.D.R. #7

Time: Tues. May 17—10:45 a.m.

Wed. May 18—10:45 a.m.



"CLINICAL PROBLEMS IN DENTISTRY FOR CHILDREN"

Arthur W. S. Wood, D.D.S., Toronto, Ontario.

Photo—Hardy

Synopsis: This presentation will attempt to discuss in a practical manner some of the everyday problems with which the dentist is confronted in caring for the child patient. The treatment of fractured anteriors, ectopic eruption, space maintenance, and other phases of child care will be discussed in the hope that they will aid the general practitioner in meeting his responsibilities and fulfilling his obligations to the children in his practice.

Biography: Dr. Wood graduated from the University of Toronto in 1943, and received post-graduate training in Paedodontics at the University of Illinois. He taught at the University of Toronto from 1943-53 as an Associate in Dentistry in the Paedodontic Department. Dr. Wood is a Past-President of the Canadian Society of Dentistry for Children, a member of the American Academy of Paedodontics, and Past Chairman of the Dental Public Health Committee of the Ontario Dental Association.

Place: P.D.R. #4

Time: Tues. May 17—10:45 a.m.

Wed. May 18—10:45 a.m.

CLINICIANS

"IMPRESSION TAKING IN FIXED BRIDGEWORK"

Owen Yule, D.D.S., Toronto, Ontario.

Synopsis: The clinic will discuss some of the qualities of the materials which are commonly used in the taking of impressions for the construction of a fixed bridge, and suggestions will be made relative to the choice of a material for a particular case and a technique for its use.

Biography: Dr. Yule graduated from the University of Toronto in 1934 and practises general dentistry in the city of Toronto. He is a member of the staff of the Faculty of Dentistry, having been attached to the Prosthetic and Radiodontic Departments.

Place: P.D.R. #6.

Time: Tues. May 17—10:45 a.m.

Wed. May 18—10:45 a.m.

"PATIENT SELECTION"

A presentation by officers of the R.C.D.C. School.

Brigadier Elgin M. Wansbrough, Director General Dental Services.

Clinicians: Lt.-Col. I. A. L. Millar, Major A. T. Roger and Major G. R. Covey.

Synopsis: Introducing the treatment load as the governing factor in the provision of dental treatment for the Armed Services. A demonstration of how patients are categorized and the patient selection method used to obtain the most beneficial results for the greatest number. Treatment procedures in keeping with these requirements will be enumerated and their development demonstrated. This theme, as presented, has considerable application to the busy practice. The presentation comprises a group clinic by the Commandant and Officers of the R.C.D.C. School, with introductory remarks by the Director General of Dental Services.

Place: P.D.R. #4.

Time: Tues. May 17—9:30 a.m.

Wed. May 18—9:30 a.m.



"SEMINAR IN ONE-QUARTER TIME"

A group clinic presentation by the
Dental Public Health Committee of the O.D.A.

Attendance Limited to 60.

This Clinic will utilize actual clinical demonstrations with patients.

Dr. Marjorie Jackson, Toronto — "What to look for, and what to find in pre-school and mixed dentition age groups."

Dr. W. K. Shultis, Toronto — "Mixed dentition analysis."

Dr. M. J. Crockford, Toronto — "Operative Procedures and Space Maintainers."

Dr. T. J. Crouch, Toronto — "Appliances in Action."

Place: P.D.R. #9

Time: Tues. May 17—9:45 a.m.

"TWELVE MINUTE PRESENTATIONS"

These presentations will be exactly twelve minutes in duration and will cover a variety of subjects.

Moderator—Dr. Roy G. Ellis, Dean, Faculty of Dentistry, University of Toronto.

Speakers—

Dr. H. K. Brown — "The responsibility of the private practitioner in relation to water fluoridation".

Dr. J. B. MacDonald — "The toxicity of pocket contents in periodontal disease".

Dr. H. J. Merkeley — "A progress report on some aspects of mouth preparation for dentures".

Dr. J. E. Mitchell — "Operative Dentistry and the Cleft Palate Child".

Dr. F. D. Ostrander — "Conservative Approach in Endodontics".

Dr. H. M. Tanner — "The Hydroflo Technique — one of the big three in general practice of dentistry".

Dr. E. C. Thompson — "Newer drugs for use in oral surgery".

Dr. J. F. Volker — "Endocrine function of the salivary glands".

Place: Ballroom

Time: Tues. May 17—2:15 p.m.

TABLE

CROWN AND BRIDGE

Major Garth C. Evans, Ottawa "The Use of Acrylics in Crown and Bridge Work".

DENTAL PUBLIC HEALTH

Dr. Ralph Connōr, St. Catharines "Dental Public Health".

Drs. Frank Compton, Robert Grainger and J. W. M. Lawrence
"Newer Trends in Community Dental Health Programmes".

ENDODONTICS

Dr. George Hare, Toronto "The Obliteration of the Root Canal".

OPERATIVE DENTISTRY

Mr. John A. Chalmers, Toronto "Pin Inlays—Laboratory Procedure".

Dr. G. C. Darts, Vancouver "Gold Foil Fillings".

Dr. D. Blake McAdam, Toronto "Silver Amalgam Restorations".

Dr. W. J. Ross, Toronto "Pin Inlays—Operative Procedure".

Dr. Keith Routley, Winnipeg "The Use of High Speed Equipment
in Operative Dentistry".

Dr. M. J. Sheldon, Toronto "Gold Inlay Failures".

Dr. C. L. Strachan, London "Daily Operative Aids".

ORAL SURGERY AND ANAESTHESIA

Dr. A. A. Antoni, Toronto "Diagnosis and Treatment of
Temporo-Mandibular Joint Derangements".

Dr. Douglas Brown, Winnipeg "Local Anaesthesia".

Dr. D. H. MacDonald, Toronto "Trilene Anaesthesia and Analgesia".

Dr. J. M. McCaffery, Calgary "Intra-septal Alveolotomy".

Dr. John Methven, Toronto "Resuscitation".

ORTHODONTICS "Orthodontics for the General Practitioner"

Dr. R. A. Erickson, Toronto "General Considerations of Facial Growth".

Dr. R. D. Leuty, Toronto "Habits and their Prevention".

Dr. B. J. Levin, Toronto— } "Fabrication of Quick-Cured Orthodontic
Dr. D. G. Woodside, Toronto— } Appliances".

CLINICS

PAEDODONTICS

- Dr. D. B. McDonald, Vancouver "Space Maintenance".
Dr. J. P. McGuigan, Halifax "Fractured Anterior Teeth in Children".
Dr. Gordon Monteith, Toronto "Cavity Preparation in Deciduous Teeth".

PERIODONTICS

- Dr. D. M. Anderson, Hamilton To be selected
Dr. R. F. Harvey, Montreal "Operative Procedures in Preventive Periodontics"

PROSTHODONTICS

- Dr. A. H. Crowson, Ottawa "Some Practical Tips in Immediate Denture Construction".
Dr. Michael Pottinger, Vancouver "The Reasons for Mouth Reconstruction".

RADIODONTICS

- Dr. R. W. Marshall, Toronto "What's in a Radiograph?"

RESEARCH

- Dr. H. A. Hunter, and Dr. J. B. MacDonald, Toronto
"Hormones and Infection".
- Dr. E. M. Madlener and Dr. Gordon Nikiforuk, Toronto
"The Skin of Your Teeth".

**DENTAL NURSES ALUMNAE ASSOCIATION AND
THE ONTARIO DENTAL NURSES AND ASSISTANTS ASSOCIATION**

- Miss Sylvannia Hazell, Hamilton "Asepsis in Endodontics".
Miss Kay Longworth
Miss Margaret Walters, Niagara District, "Appearance of a Dental Assistant".
Miss Mary Jane Screaton, "In the Orthodontic Office".
Miss Heather Stewart, "Dark-room Highlights".
Mrs. Murray Stewart, "Sugarless Treats".

SCIENTIFIC MOTION PICTURES

Monday, May 16th., 9.30 a.m.-11.30 a.m.

- 9.30 a.m.—Dental Amalgam Failures Caused by Moisture Contamination.
National Bureau of Standards, Washington, D.C.
- 9.45 a.m.—Preparation of the Mouth for Dentures.
University of Minnesota, School of Dentistry.
- 10.30 a.m.—Oral Cancer; Problem of Early Diagnosis.
American Cancer Society & U.S. Public Health Services.
- 11.00 a.m.—Occlusal Equilibration.
Nathan Allen Shore—New York, N.Y.

Tuesday, May 17th., 9.30 a.m.-11.30 a.m.

- 9.30 a.m.—A Drop in the Bucket. (Community Fluoridation)
United States Public Health Services.
- 9.45 a.m.—Intraoral and Pharyngeal Movements.
H. M. Syrop, V.A. Dental Services, Washington D.C.
- 10.00 a.m.—Casting of Dental Gold Inlays, Thermal Expansion Technique.
National Bureau of Standards, Washington, D.C.
- 10.30 a.m.—Examining the Oral Cavity.
University of Minnesota, School of Dentistry.
- 11.15 a.m.—Removal of Impactions.
Drs. H. M. Seldin, S. D. Seldin, Wm. Rakower, New York, N.Y.

Wednesday, May 18th., 9.30 a.m.-11.30 a.m.

- 9.30 a.m.—A Drop in the Bucket. (Community Fluoridation)
- 9.45 a.m.—Dental Amalgam Failures Caused by Moisture Contamination.
- 10.00 a.m.—Oral Cancer; Problem of Early Diagnosis.
- 10.30 a.m.—Occlusal Equilibration.
- 11.15 a.m.—Examining the Oral Cavity

SPECIAL FUNCTIONS

SUNDAY EVENING MUSICALE

"A delightful programme of Opera Miniatures"

Directed by George Crum

ARTISTS

Patricia Snell—Soprano

Ernest Adams—Tenor

Irene Loosberg—Mezzo-Soprano

Andrew MacMillan—Baritone

Concert Hall, Royal York Hotel.

Sunday, May 15, 1955. 8:45 p.m.

DENTAL PUBLIC HEALTH BREAKFAST

Speaker: Dr. Gordon Bates, General Director, Health League of Canada

Subject: "Health as a National and International Objective"

Tudor Room, Royal York Hotel

Monday, May 16, 1955. 8:30 a.m.

NOTE: Please obtain your breakfast tickets in advance by sending your cheque for \$2.00, payable to:

Secretary, Dental Public Health Committee,
Ontario Dental Association,
234 St. George St., Toronto.

CANADIAN DENTAL ASSOCIATION LUNCHEON

Speaker: Dr. P. G. Anderson, President, The Canadian Dental Association

Subject: A Philosophy for the Dental Profession.

Concert Hall, Royal York Hotel.

Monday, May 16, 1955. 12:15 p.m.

ONTARIO DENTAL ASSOCIATION LUNCHEON

Speaker: To Be Announced

Subject: To Be Announced

Concert Hall, Royal York Hotel.

Tuesday, May 17, 1955. 12:15 p.m.

CLASS AND FRATERNITY DINNERS

2T3—P.D.R. #9. R.Y.H.	6:30 p.m. Monday	4T0—Details later
2T5—P.D.R. #8 R.Y.H.	6:30 p.m. Monday	5T0—Class to be notified
3T0—138 Lytton Blvd.	4:00 p.m. Sunday	5T1—Details later
—Library, R.Y.H.	6:30 p.m. Monday	5T2—P.D.R. #10—R.Y.H.—6:30 p.m.
3T5 (Details later)	6:30 p.m. Monday	Alpha Omega—Tudor Room, R.Y.H.—6. 30 p.m.

ROYAL CANADIAN DENTAL CORPS LUNCHEON

P.D.R. 1-3, Royal York Hotel.

Wednesday, May 18, 1955. 12:30 p.m.

SPECIAL FUNCTIONS

ART EXHIBIT

Be sure to visit the Art Exhibit on the Convention Mezzanine
(one flight above the Convention Floor).

See your colleagues' and associates' efforts on display

See—oil paintings, sketches, pastels, printing by numbers, scotchlite art, miniature castings, leathercraft, carved driftwood, woodwork, pottery, sculpture, ceramics, shellcraft, and many others.

Exhibit open immediately following the Sunday Evening Musicale

Plan to attend the . . .

PRESIDENTS' BALL

in the

ROYAL YORK HOTEL CONCERT HALL

Tuesday, May 17, 1955

It's to be a "Gay Nineties" evening

Music by

Mart Kenney and His Western Gentlemen

with

Vocalist—Norma Locke

Cocktail and Social Hour in the Ballroom—6:30-7:30 P.M.

Dinner—7:30 P.M.

Floor Show and Dancing until 1:00 A.M.

Tickets: \$10.00 per couple.

This will be the outstanding social event of the Joint Convention of the Canadian Dental Association and the Ontario Dental Association.

D O N ' T M I S S I T !

LADIES' PROGRAMME



Mrs. P. G. Anderson
Photo — Skilling



Mrs. L. R. Braden

The Toronto ladies of the Convention Committee are looking forward with keen anticipation to the pleasure of entertaining the wives of all the visiting delegates at our joint C.D.A. and O.D.A. Convention in May. Do plan to attend with your husband and enjoy our city and our special Ladies' Programme.

Mrs. P. G. Anderson
Mrs. L. R. Braden

The following tentative programme has been prepared for the pleasure and entertainment of the ladies attending the Convention:

Sunday, May 15

- 2:00—5:00 p.m. — Registration
- 8:45 p.m. — Sunday Evening Musicale

Monday, May 16

- 9:00—11:45 a.m. — Registration
- 10:00—11:30 a.m. — Coffee Party—Palm Court
- 6:30 p.m. — Buffet Dinner—Roof Gardens
- "Old-Fashioned" Fashion Show staged with the courtesy of the Alpha Gamma Delta Fraternity.
- Bridge.

Tuesday, May 17

- 1:00 p.m. — Luncheon and Tour of Casa Loma
- 6:30 p.m. — Cocktail and Social Hour—Ballroom
- 7:30 p.m. — Dinner and Presidents' Ball—Concert Hall.
Theme—"The Gay Nineties"

ADVANCED REGISTRATION

Application Form for Dentists

Joint Meeting

THE CANADIAN DENTAL ASSOCIATION

THE ONTARIO DENTAL ASSOCIATION

Royal York Hotel, Toronto

Board of Governors: May 11-14, 1955

Convention: May 15-18, 1955

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Advance Registration and Hotel Accommodation

The registration fee for the profession is \$20.00.

Advance registration facilitates convention arrangements and therefore saves your time.

Hotel reservations **MUST** be made directly to the hotel of your choice.

C.D.A.-O.D.A. Convention Registration Form

Applicant.

NAME
(please print)

ADDRESS

My cheque for the REGISTRATION FEE (\$20.00) payable at par, Toronto, is enclosed.
Make cheques payable to—"C.D.A.-O.D.A. Convention Account".

Ladies' Advanced Registration

The registration fee for the Ladies' Programme is \$10.00. Please register in advance.

NAME
(please print)

ADDRESS

My cheque for the REGISTRATION FEE (\$10.00) payable at par, Toronto, is enclosed.

Forward all cheques to

**Mrs. Peggy Booker, Treasurer,
Convention Committee,
234 St. George Street,
Toronto, Ontario.**

EDITORIAL

“A Tale of Two Cities”

Two Western Canadian cities have recently conducted referenda relating to the possible introduction of the fluoridation procedure into their communal water supplies. In Regina the measure was defeated, but in Saskatoon, by the narrowest of margins, the plebiscite proved successful for the proponents of fluoridation.

On the face of it, perhaps, there is nothing of an unusual nature about the outcome of each vote—it demonstrates simply the expression of opinion of the electorate. However, when viewed in their entirety the referenda demonstrate a problem which should be of great concern to all health workers. This issue is the apparent lack of faith and confidence in the considered opinions of the most authoritative and responsible health agencies of our continent. In Canada there are several organizations endorsing fluoridation; the Canadian Dental Association, the Canadian Medical Association, the Canadian Public Health Association, the Canadian Society of Dentistry for Children, the Health League of Canada, and many local medical and dental societies.

In the United States the list of organizations endorsing fluoridation is a long one; the American Dental Association, the American Medical Association, the American Public Health Association, the American Public Welfare Association, the National Research Council in Washington, the United States Public Health Service, the State and Territorial Health Officers Association, the American Pharmaceutical Association, the American Academy of Paediatrics, the American So-

ciety of Dentistry for Children, the United States Army Medical Services, the American Hospital Association, the State and Territorial Dental Health Directors Association, and again countless local medical and dental groups.

Added to this support, the Boards of Health of both Regina and Saskatoon had unanimously recommended to the local councils that fluoridation be instituted at the earliest moment for the partial prevention of dental caries.

In spite of this overwhelming recommendation, vast numbers of the electorate chose to ignore this advice and listened instead to an emotional outpouring of falsehoods and deceptions. The machinations of the anti-fluoride forces were everywhere in evidence.

All public health measures to date have been treated with similar receptions. Even a simple matter such as the wrapping of bread in some municipalities has been opposed with almost fanatical zeal. Health workers as such find it only abortive to attempt to influence such a fringe. The prime concern, however, is the uninformed persons who without sufficient knowledge or understanding are not able to analyse these blatant fabrications for what they really are.

We now enter into what may be called the philosophy of leadership. Communities elect individuals to perform those functions which pertain to their local affairs—education, street maintenance, garbage disposal, fire and police protection, welfare, health, and many others. It is completely understandable that the elected representatives cannot be consid-

ered expert in all the various fields in which they are called upon to make decisions. For that purpose it is common for boards or commissions to be appointed to advise councils upon certain matters. The tragedy in so many communities where fluoridation has been proposed, is that local councils following receipt of unanimous recommendations for the institution of the measure, and supported by a vast array of scientific endorsement, are unwilling to provide the necessary leadership to initiate the procedure in their local communities because of what might be called political expediency. Unfortunately, the fear of possible consequences at the ballot box in many instances takes precedence over the welfare of the citizens as a whole. In this area of service, it perhaps would be too strong to say that leadership by elected officials is dying; however, the casket does appear to be selected.

The concept of democracy is never more in evidence than when local councils decide to refer their responsibilities to the electorate. With almost angelic self-righteousness some councillors are most vociferous in their protestations for the necessity of obtaining the will of the people, whether or not those persons have

sufficient scientific understanding either to approve or disapprove the matter under consideration. Every day these representatives are called upon to decide upon policies, or make enactments which directly affect the people whom they represent. It would be unthinkable to refer to the electorate for an opinion matters which require consultative engineering advice or guidance from legal counsel, even though that advice or guidance almost invariably involve the people concerned. Yet when a matter as scientifically complex as fluoridation is presented, many councils literally stumble over themselves in their haste to be relieved of the personal responsibilities of making a decision.

Plebiscites give "carte blanche" to a few fanatics who frighten and almost coerce the electorate. Scientific truth and honest interpretation are foreign to their presentations. These individuals are not bound by codes of honesty or conservativeness and the common weal makes no dent upon their consciences. It is difficult for honest, sincere, and scientific logic to overcome fanatical emotion. The welfare of the people is not served by representatives evading the responsibilities of the offices to which they were elected.

NATIONAL DENTAL EXAMINING BOARD OF CANADA

Examination Results—November 1954

ALL CANDIDATES QUALIFIED

Owen Wilson Cornish, Edmonton, Alta.
William Kenyon Dickie, Halifax, N.S.
Leonard Lawrence Druckman, Montreal, Que.
John Maxwell Galvin, London, Ont.
Sydney Hornstein, Montreal, Que.
Allison Lewis Kelland, Halifax, N.S.

Gaston Lafreniere, Montebello, Que.
Ray Mulrooney, Agincourt, Ont.
Douglas Alan Norbury, Vancouver, B.C.
Joseph Sikora, Edmonton, Alta.
Anthony Vincent Tulumello, Welland, Ont.
Earle Aiken White, Shaunavon, Sask.

The Association

Annual Meeting 1955—Toronto

Board of Governors - May 11th-14th
Convention - May 15th-18th

This issue of the Journal contains the full convention programme. Provision is being made for the largest attendance yet recorded. You can greatly assist the Convention Committee in the preparations for the meeting by registering in advance. Advance registration form for your use will be found in the Journal beginning with the January issue.

Blue Cross

The next opening date for receiving C.D.A. members into the Blue Cross plan will be June 1955. This date is chosen in order to give opportunity to new graduates from the schools. For this purpose the plan will likely be opened annually in future. While it has not been definitely determined it is possible that it will be necessary for the Blue Cross to refuse to accept any more *present* members of the C.D.A. after July 1st closing. The present average age of participating C.D.A. members is 50. In order to protect the plan for participating members it is contemplated that it will be necessary to limit acceptance to new members of the Association. In this event present members will have opportunity to participate in the plan up to July 1st next, *but not after THAT date*. Those members desiring to participate should keep this probability in mind. Application may be made at any time, to take effect at the end of June by applying to:

Mr. E. L. R. Williamson,
Box 70, Brockville, Ontario.

Membership— International Dental Federation

Through the participation of the Canadian Dental Association as a member of the International Dental Federation, C.D.A. members are offered the privilege

of becoming Supporting Members of the International Dental Federation. Such membership includes subscription to the F.D.I. Journal. This Journal is an excellent publication, issued quarterly, presenting dentistry on a worldwide basis. The activities of the F.D.I. need and deserve your support. The official year of the F.D.I. begins in January. The membership fee in Canada is \$9.00. per annum. Cheques for this amount should be made payable to Don W. Gullet, National Treasurer for the F.D.I. and addressed to 234 St. George St., Toronto, Ontario.

XII International Dental Congress— Rome, 1957

The Congress will be held from 7th-14th September, 1957, in the Congress Building of the Rome Universal Exhibition. Four thousand five hundred rooms have been booked in the city hotels of Rome for the meeting. The President of the Italian Republic has agreed to assume the High Patronage of the Congress. The Organising Committee under the Presidency of Senator Dr. L. Benedetti reports good progress with preparations for the Congress. C.D.A. members contemplating attending this Congress will please notify the C.D.A. Secretary so that information relating to the Congress can be forwarded to them. If a sufficient number to make up a group express desire to make a European tour in connection with attending the Congress investigation will be made of the best facilities.

Fluoridation Notes

BRANDON, MAN.—On December 6th the city council voted to fluoridate the water supply to be in operation in two months.

KELOWNA, B.C.—By vote the citizens approved fluoridation on December 9th.

WESTWOLD, B.C.—The citizens turned down the fluoridation of the water supply by vote early in December.

SMITHERS, B.C.—Fluoridation was approved by a 3 to 1 vote in December.

SASKATOON, SASK.—Announcement has been made that fluoridation of the water supply began the first week in February.

LONDON, ONT.—Board of Health endorsed fluoridation on January 11th.

MONTREAL, P.Q.—The city executive has requested a report on the system to be introduced for fluoridating the city's water supply.

TORONTO, ONT. — Newly elected Mayor Phillips announced fluoridation as one of his objectives during 1955.

Briefs

President Anderson made an official visitation to La Société de Stomatologie de Quebec on January 17th.

The Council on Dental Education met at C.D.A. Headquarters, Toronto on January 27-28th.

The Executive of the C.D.A. will meet on March 24th and 25th next.

Committees and Councils

Research

"We are all scientists (because) the method of scientific investigation is nothing but the expression of the necessary mode of working of the human mind." Thomas Huxley.

The scope and activities of the research committee has increased steadily during the past years. This reflects a growing recognition on the part of the dental profession that the foundation for its growth is a sound basic research programme.

The committee is continuing its policy of providing assistance in the form of studentships for graduate training of dentists planning a teaching and research career. Four such fellowships have been offered during the past year; one each in the fields of Biochemistry, Nutrition, Endocrinology and Paedodontics. The committee reflects on the gratifying increase in dental research in Canada and the important contribution of studentships towards this end.

Assistance has been rendered to dental research personnel to attend other laboratories or scientific meetings in order to exchange views on mutual problems. Such assistance enabled research workers to visit the Philadelphia Center for Research in Child Growth; the University of Illinois, School of Graduate Studies and the New York Academy of Sciences Confer-

ence on "Recent Advances in the Study of the Structure, Composition, and Growth of Mineralized Tissues".

The brochure entitled "Facts on Fluoridation" prepared by the Research Committee has been revised during the past year to include the most recent studies in this field. In addition the Committee is preparing a report on "therapeutic" dentifrices. The purpose of the report is to condense the important scientific findings dealing with "therapeutic" dentifrices and thus assist the members of the profession in the evaluation of numerous and often conflicting reports.

One of the major current undertakings of the committee is a survey of the present status of dental research in Canada. The survey is intended to serve as a base line in determining the best direction for further expansion of dental research in this country. The findings of the survey have been presented to the Council on Dental Education. These findings emphasize the urgent need for more qualified research personnel in the dental schools of this country—a need that is becoming even more pressing when viewed in the light of the dental practice of tomorrow with its greater emphasis on the biological aspects of oral medicine and the concomitant development of preventive dentistry.

Gordon Nikiforuk, Chairman.

Survey of Dental Practice—1954

Part III—Income Related to Equipment and Time

(a) Income Related To Equipment

According to the respondents over 50% of dentists have one dental chair in their offices but those possessing two chairs have a higher mean income.

A small percentage have three and four chairs with an increasingly higher income. The percentage is too small for five chairs to be recognized as a satisfactory figure for income. Table VII sets forth this information.

TABLE VII		
Independent Dentists		
1953 Mean Net Income—Number of Chairs		
No. of Chairs	Per cent of Dentists	Mean Net Income
Blank.....	.2	3718
1.....	53.6	6508
2.....	41.5	8793
3.....	3.9	9156
4.....	.6	11328
5.....	.2	7115
	100.0	7582

cda '54 survey of dental practice.

Table VIII indicates the relationship of income to x-ray equipment in the dental office. It will be observed that 90% of offices are now equipped with x-ray machines and these offices indicate a much better mean income than those without x-ray equipment.

TABLE VIII		
Independent Dentists		
1953 Mean Net Income—X-ray Equipment		
X-ray Equipment	Per cent of Dentists	Mean Net Income
Blank.....	.4	3785
Yes.....	89.8	7866
No.....	9.8	5120
	100.0	7582

cda '54 survey of dental practice.

Slightly over 18% of the respondents reported gas machines as part of office equipment. Contrary to the reports made in respect to x-ray equipment and additional chairs these dentists had a mean income 14% lower than those who did not possess gas equipment (Table IX).

TABLE IX		
Independent Dentists		
1953 Mean Net Income—Gas Machines		
Gas Equipment	Per cent of Dentists	Mean Net Income
Blank.....	1.3	4984
Yes.....	18.3	6729
No.....	80.4	7820
	100.0	7582

cda '54 survey of dental practice.

(b) Income Related To Time

Over 50% of dentists reported the average length of appointment as being 45 minutes. Only 1% reported an average length of appointment of one-half hour. The average net income reported by those using an average of 45 minute appointments was reported to be much higher than for other periods. (Table X).

TABLE X		
Independent Dentists		
Mean Net Income—Length of Appointment		
Average Appointment	Per cent of Dentists	Mean Net Income
30 minutes.....	1.0	7462
45 minutes.....	53.4	8315
1 hour.....	34.0	6909
Over 1 hour.....	10.8	6332
Blank.....	.8	4214
	100.0	7582

cda '54 survey of dental practice.

In answer to the question as to how many weeks the respondent worked as a practising dentist during the year 1953 approximately 20% stated 48 weeks. The highest mean net income (excepting the respondents who reported working 43 weeks

of which the percentage is small) was reported by 10% of the respondents who worked 47 weeks and the second highest by approximately 8% who reported working 46 weeks. These and others facts related thereto are shown in Table XI.

TABLE XI

Independent Dentists
1953 Mean Net Income—No. of Weeks Worked

No. of Weeks Worked	Per cent of Respondents	Mean Net Income
52	4.6	6516
51	2.8	7046
50	13.6	7229
49	13.6	7746
48	20.1	8070
47	10.0	9055
46	7.8	8776
45	6.1	7978
44	4.4	8523
43	1.5	9066
42	2.2	7255
41	1.1	8756
Less than 41	12.7	4841
	100.0	7582

cda '54 survey of dental practice.

In Table XII is shown the time loss through illness or disability by the respondents. Over 50% lost no time during the year 1953. 32.1% of Canadian dentists lost up to one week, 12.5% were away from their offices from one week to one month and 3.6% lost over one month through illness and disabilities.

The questionnaire requested information respecting the division of time spent in the dental office during the average week. The mean number of hours per week spent in the dental office during 1953 for general practitioners was 41.5 and for specialists 39.2. Table XIII indicates how these hours were divided between chairside, laboratory and other duties.

TABLE XII

Independent Dentists
No. of Days Absent 1953—Illness or Disability

No. of Days Absent	Per cent of Dentists	Cumulative Per Cent
0	51.8	51.8
1	3.7	55.5
2	7.1	62.6
3	5.7	68.3
4	3.9	72.2
5	4.1	76.3
6	3.0	79.3
7	4.6	83.9
8-12	5.6	89.5
13-17	3.0	92.5
18-22	2.1	94.6
23-27	.8	94.9
28-32	1.5	96.4
33-44	1.3	97.7
45-54	.3	98.0
55-64	.4	98.4
65-74	.3	98.7
75-84	.3	99.0
85-94	.2	99.2
95-104	.1	99.3
105 and more	.7	100.0

cda '54 survey of dental practice.

TABLE XIII

Independent Dentists
Mean No. of Office Hours per Week—Type of Activity

Type of Activity	General Practitioner	Specialist	All Types of Practice
Chairside	34.2	30.8	33.9
Laboratory	3.6	4.8	3.7
Other Hours in Office	3.7	3.6	3.7
Total	41.5	39.2	41.3

cda '54 survey of dental practice.

Part IV of this series will deal with specialists and auxiliary personnel and appear in the next issue of the Journal.

SPECIAL NOTICE: The Blue Cross Group will be re-opened for C.D.A. Members in May, primarily to admit new graduates. Others not already participating may apply at this time, and must submit applications with premium remittances by 15 May at latest. The Group will not be re-opened in any circumstances until May, 1956.

An intimation has been received from the Blue Cross authorities that they may find it necessary to make the May, 1955 opening the last opportunity for present Members of the C.D.A. to subscribe. This may be required to prevent "actuarial selection against the fund"—i.e., deferment of participation by an individual until hospitalization is impending, through advances in age if nothing else.

Economic Security

The "Deductible"—An Essential to True Insurance

By E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.,
Economist, and Administrator of the C.D.A. Plan

The President of the American Society of Actuaries stated in his presidential address not long ago: "We must educate the public in the importance of the 'deductible'—either in money or time—as an essential feature of economical and efficient insurance." Mr. John S. Forsyth, Canadian head of the distinguished firm of actuaries, the Wyatt Company, recently wrote, "The substantial 'deductible' is essential to true insurance."

It is well for the public to receive such comments from these recognised authorities. In the constant effort to out-bid one another for public favour, insurance sales campaigns with "first-day cover" have tended to push into the background the essential role of insurance: *Protection of the insured against disastrous loss*; it ceases to be insurance when it is employed to remove trifling inconvenience—worse when it becomes an incentive to carelessness.

Emphatic demonstration of this is given in the history of automobile insurance: At one time "full cover" for collision was regularly provided. It soon became evident, however, that this was resulting in an attitude on the part of drivers, "Why should I be careful? The company has to pay." "Full cover" now is granted only in special cases and at a greatly increased premium, while the car owner now rightly accepts without question the need for \$100 or \$250 "deductible" as an essential to reasonably priced automobile insurance. The proper function of insurance in respect of automobiles is the bearing of losses which would be disastrous to the individual: the relatively small amount which the individual has to pay excites him to care, the large sum which he could in no way, or with more

difficulty, meet out of his own resources, is met by the company.

Similarly, in regard to fire insurance: no one should expect to make a "profit" out of a fire. If an individual attempts to carry insurance in such amounts that this may result, it will be regarded with the utmost suspicion by the underwriters, and some of the insurance will be cancelled by them. Again, the most economical insurance is that under which the individual "co-insures" to the extent of a small proportion of the potential loss and further promises to rebuild on the same property.

These lessons have not yet been learned in regard to Sickness and Accident Insurance. "First-day", or "Eighth-day" or "Fifteenth-day" cover is offered as a sales attraction although it is fundamentally unsound insurance: Claims result for loss of time which is more or less inconsequential to the individual; yet the cost of administering a small claim is as great as that for a major long term disability. The result is an increasing cost necessitating ever higher premium rates, which in turn creates a demand for nationalised health insurance. Again, the proper role of insurance is not protection against the inconvenience of three weeks "or even three months" disability, but against the disaster of three years or thirty years of disability.

The provision of a "deductible" in terms of time—i.e., an "elimination period"—is therefore, an essential feature of efficient and economical sickness and accident insurance. For the recent graduate, just started in practice, a shorter—say 30-day elimination, is necessary; for the established practitioner, a 90-day elimination period should in most cases be the extent of the "co-insurance" employed to obtain efficient and economical protection.

A further practical example of the important results to be achieved in the field of health insurance by even a small deductible is to be found in the National Blue Cross Group recently established for

the C.D.A. Members: the minor deductible of \$25 allowed an increase in the number of days of semi-private hospitalisation from 51 to 180, and an increase in X-Ray and Special Drug benefits from \$25 each to \$150 each.

"What you get you pay for" is a truism applicable nowhere with greater force

than in the field of insurance: The luxury of "first-day" cover all too often is paid for by years of necessity uncovered at the other end of the period of disability. In effect, the agent offering this is saying with Mr. Bill Eddy, the renowned wit, "Why insist on quality when you can get a ding-dong for the same price?" !

The Corps

Lt.-Col. J. A. MacGowan is attending a Dental Officer Advanced course at the Army Medical Service Graduate School, Washington, U.S.A.

Major J. M. R. Gourdeau has been released from the Royal Canadian Dental Corps.

Lt.-Col. V. R. Farrell has been appointed Senior Operator in No. 12 Coy. RCDC at H.M.C.S. "Cornwallis", Cornwallis, Nova Scotia.

Lt.-Col. W. M. Sinclair has been posted to No. 13 Coy. R.C.D.C., Trenton, Ontario.

R.C.D.C. Association

The Royal Canadian Dental Association will hold a re-union Luncheon during the forthcoming Convention of the Ontario and Canadian Dental Associations. All former officers of the Corps as well as RCDC (Active) and RCDC (Militia) officers who plan to attend the Convention are invited.

The Association extends a special invitation to all former officers of the CADC who served in World War I. The Luncheon will take place at 12.30 p.m., Wednesday, May 18, 1955, in Private Dining Rooms 1-3, Royal York Hotel.

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions

EWING, J. E.: Fixed partial prosthesis. 1954. 208p. illus.

HOLLINSHEAD, W. H.: Anatomy for surgeons. Vol. I — Head and neck. 1954. 560p. illus.

HUTCHINSON, A. C. W.: Dental and oral x-ray diagnosis. 1954. 524p. illus.

KENNEDY, J. A.: Relax and live. 1953. 205p.

ONTARIO—DEPT. OF HEALTH. A guide to hospital building in Ontario. 1954. 307p. illus.

REDDISH, G. F. ed.: Antiseptics, disinfectants, fungicides, and chemical and physical sterilization. 1954. 841p. illus.

ROON, K.: Relax and enjoy life. 1949. 298p. illus.

SHAW, J. H.: Fluoridation as a public health measure. 1954. 232p. illus.

The Provinces

Quebec

Dr. Gordon P. Kelly was elected president at **The 57th Annual Meeting of the Montreal Dental Club** held at the Queen's Hotel on Monday, January 17th, 1955. Other officers elected were: Past President — Dr. Frank Edward; President-elect — Dr. A. T. Donohue; Secretary — Dr. Howard Oliver; Treasurer — Dr. A. E. Pye; Historian and Archivist — Dr. C. C. Bourne; Members of the Executive Committee — Drs. D. Armstrong, C. Asselin, E. T. Cleveland, G. Dundass, R. McMahon, and T. R. Murray.

Previous to the election of officers, the Retiring President, Dr. Frank Edward, welcomed the large assembly before calling on the various members of his committee for their reports.

The Financial Report — Dr. A. Pye presented the financial report and for the first time in many years it was a pleasant duty as there was more black showing than in previous years.

Fall Clinic Report — Dr. Bruce Ward gave us a few statistics on this popular event showing an attendance of 287 from Montreal and 131 from out of town. A good profit was shown and a pleasant outlook with bigger and better accommodation for future clinics.

Archivist Report — Dr. C. C. Bourne reviewed the official meetings held the past year.

Insurance — Dr. Gordon Kelly assured us that we can participate in all the plans of the C.D.A. scheme.

College of Dental Surgeons, P.Q. — Dr. Johnson Abraham, retiring president, reviewed the activities of the College for the past year. With regard to the National Examining Board, he stated that the College had done its best to persuade the Provincial Government to allow the College to participate, but that efforts to date have not been successful. Fortunately, the National Examining Board realized the situation and would accept Quebec applicants to write the examinations.

With regard to Public Education, he stated that excellent progress is being made with fine cooperation of the press, radio and television.

On Illegal Practice — Dr. Abraham noted that the highest system of fines are in effect in this province, but in spite of this fact, it is still a costly undertaking to curb those illegally practicing dentistry.

In his President's Report, Dr. Edward reviewed the past year and was pleased to note that attendance at meetings was on the increase, although the participation in the Golf and Winter Meets was not what

it should be. He congratulated Dr. Bruce Ward on his successful running of the Fall Clinic in this his first year. He also congratulated Dr. G. Racey on being elected to the Board of the C.D.A.

Honorary Membership was bestowed on Dr. M. L. Donigan for his many years of service to the Club in running the Fall Clinics, and on Dr. Ralph Edmison upon completion of 35 years in the practice of dentistry.
P. A. L.

The Physician and the Dentist Meet the Patient was the topic discussed at a meeting of **The Montreal Section, The American Academy of Dental Medicine**, held in the Assembly Hall of the Medical Building at McGill University on January 31st.

A panel of physicians and dentists discussed the problem under the chairmanship of Dr. John Gerrie, D.D.S., M.D.C.M.

Other members of the panel were: Dr. R. Webster, M.D.C.M.; Dr. Louis Lowenstein, M.D.C.M.; Dr. L. Gervin Lajois, M.D.C.M.; Dr. Gerald Racey, D.D.S.; Dr. R. M. Weiner, D.D.S.; Dr. J. P. Lussier, D.D.S.

A large gathering of both dentists and physicians was in attendance at this unique meeting, brought about principally through the efforts of the president of the Montreal Section, Dr. Louis Rosen.

A further report will appear in the next issue of The Journal.

Alberta

In an address given before the **Calgary Dental Society** January 10, 1955, Dr. R. R. McIntyre of Calgary, President-elect of the Canadian Dental Association, gave some impressions concerning dental practice in Europe, where he visited some 12 countries recently. Dr. McIntyre was careful to intimate that his observations were particularly concerned with orthodontics, the specialty in dentistry which he practised in Calgary for a number of years.

He visited dental schools in Paris, Rome, Vienna, Zurich, Dusseldorf, Utrecht, Amsterdam, three in London and one in Edinburgh, and was greatly impressed with the equipment and modern procedure.

Dr. McIntyre further emphasized that the temperament of Europeans tends to thoroughness in research, citing as examples Dr. Swartz of Vienna, Prof. J. C. Brash of London, men who are still living and unsurpassed in their respective fields, and Drs. Gotlieb, Oppenheim and Orban who came to the U.S. from Europe, and had very beneficial influence on dental training on this continent.

He reminded his audience that twice in our lifetime Europe has been wrecked by the ravages of war, hindering progress that normally would have followed.

On a general basis dentistry did not appear as well organized as on this continent, citing the example of 96,000 dentists in the U.S.A. and over 5,000 in Canada, each operating under a national organization, whereas in a small nation like Switzerland four languages are spoken, three of which are official. This makes the functioning of a national governing body a real problem.

In England and Switzerland the National Health Scheme so far as dentistry was concerned was having difficult times, owing to the tremendous increase in demand for dental services without a proportionate increase in the number of dentists.

G. C. S.

At the regular monthly meeting of the **Edmonton and District Dental Society**, Dr. W. Hudson Scott was the guest speaker.

Dr. Scott presented to his fellow members an interesting and well-received speech on the role of Dentists in Civil Defence.

This was followed by a colour film on "Disaster Anaesthesia", describing in detail a suitable method for emergency general anaesthesia using ether as the agent of choice.

J. M. S.

Saskatchewan

Dr. G. E. H. DeWitt was a guest of honour to his dental associates in Regina and district, where he had practised for the past forty-two years. A large number attended the occasion to do honour to Dr. DeWitt upon his retirement from practice. Those who reminisced and paid tribute to his contribution to the society and dentistry were Drs. Irwin Robb, L. J. D. Fasken and F. S. VanWort. A gift was presented by Dr. F. Wikak on behalf of the Society and District and Dr. DeWitt replied suitably.

L. D. H.

Newfoundland

At the recent Annual Meeting of the **Newfoundland Dental Society**, held at St. John's on Jan. 31st, Feb. 1st and 2nd, Dr. G. B. Curtis, 103 LeMarchant Road, St. John's, was elected Associate Editor from Newfoundland of the Journal. He will forthwith replace Dr. G. E. Mallam.

Other officers elected were: Immediate Past President — Dr. R. W. Ball, Grand Falls; President — Dr. J. D. Darcy, St.

John's; 1st Vice-President — Dr. H. M. Brown, Bonavista; 2nd Vice-President — Dr. T. E. Harris, St. John's; Secretary-Treasurer — Dr. D. K. Peters, St. John's.
D. K. P.

Ontario

Dr. Stan Watson presided at the January meeting of the **Kingston and District Dental Society**.

The speaker was Dr. Victor Pinard of Ottawa. He discussed endodontia, the filling of root canals in teeth. Dr. Pinard practised for twenty-one years in Paris, France, and he recounted some of his experiences in that country. He and his wife left Paris in June, 1940, just three days ahead of the invaders. Dr. Pinard showed two films displaying some of the beauties of France. The movies were obtained from the French Embassy in Ottawa. The speaker also proved that he is a budding Churchill by presenting several examples of oil painting which is one of his hobbies.

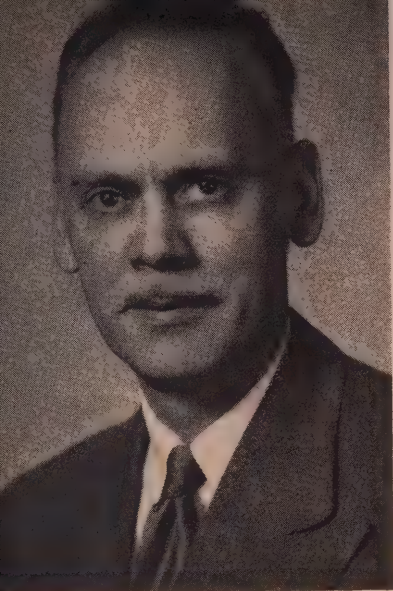
Following a dinner meeting held recently in Timmins, dentists from the Porcupine area heard a clinical lecture given by Dr. W. J. Ross, of the Faculty of Dentistry, University of Toronto.

Those present at the meeting were Dr. C. Robins of Cochrane, Dr. E. Somerville of South Porcupine, Dr. R. V. Weston of Schumacher, and Drs. K. V. Allen, I. T. Brill, J. Martin, J. Parisi, G. H. Gardner, S. Gibson, S. E. Caverly, and W. J. Downer, all of Timmins.

The **Niagara Peninsula Dental Association** held its annual meeting in St. Catharines recently. Forty-seven members heard an excellent address by Dr. H. A. Solomon of Buffalo, entitled "Oral Tumours and Allied Disease".

The speaker was introduced by Dr. D. G. Johnstone of Niagara Falls, and thanked by Dr. G. R. Goodline of St. Catharines. The president, Dr. G. E. Burgman of Niagara Falls, was in the chair.

The monthly dinner meeting of the **Lambton County Dental Society** was held in Sarnia on January 10th, when the guest speaker was Dr. D. C. Way of London. His subject was "Practical Orthodontics in General Practice".



DR. C. M. WHITWORTH,

President

British Columbia Dental Association

British Columbia

Culminating a year of experiment, thought and study, the **Vancouver and District Dental Society** on February 1st at the Home Talent meeting offered these clinics which attracted an enthusiastic attendance:

Afternoon Chair Clinics

"Root Canal Therapy & Apicoectomy in one Appointment"—Endodontic Study Club—Drs. C. Ames, I. R. Bowlsby.
 "Gold Foil, Class 3"—Intercity Gold Foil Study Club—Dr. C. P. Johnson.
 "Prosthodontia"—Vancouver Denture Study Club—Dr. C. R. Hallman (Mentor).
 "Devital Pulpotomy"—Intercity Paedodontia Study Club—Drs. H. W. Helm, R. A. Mitchell.

Afternoon Table Clinics

"Paedodontia under General Anesthetic"—Dr. T. G. Parsons—Anesthesia by Dr. C. Logan.
 "Carving, Investing and Casting Indirect Inlays"—Dr. John Gansner.
 "Impacted Third Molar and the Unerupted Cuspid"—Dr. H. E. Simmons.
 "Prosthodontia"—The Vancouver Denture Study Club.
 "Stainless Steel Crowns"—Intercity Paedodontia Study Club—Drs. J. S. Craib, R. F. Butler, H. W. Smillie, D. J. Yeo.
 "Selective Spot Grinding"—Dr. W. R. Scott.
 "Retention Simplified with Prefabricated Gold Pins"—Dr. M. M. Chechik.
 "Articulation"—Dr. A. F. Rader.

Evening Chair Clinics

"A Direct Wax Pattern for a Three-Quarter Crown"—Dr. J. H. Merrell.
 "Amalgam"—Dr. R. B. Telford.
 "Gold Foil, Class 5"—Vancouver Ferrier Study Club—Dr. J. R. Ingledew.

Evening Table Clinics

"Fractures and Prognathic Reduction"—Dr. H. E. Simmons.
 "Paedodontia under General Anesthetic"—Dr. T. G. Parsons.
 "Facility in Instrument Selection"—Dr. R. I. Yorsh.
 "Endodontics in Young Permanent Teeth"—Endodontic Study Club—Drs. R. J. O'Neill, C. W. Gardner, A. K. Buckwold.
 "Cervical Anchorage in Orthodontics"—Dr. C. E. Craig.
 "Denture Using Natural Teeth"—Dr. E. E. Martin.
 "Oral Diagnosis"—Oral Diagnosis Study Club—Dr. D. G. Marshall.

The **Victoria and District Dental Society** held its regular monthly dinner meeting at the Empress Hotel on January 17th. Dr. Ken Murchie gave an interesting lecture on "Endodontia". Dr. E. N. Screech, recently from England and now practising in Victoria, spoke on the problems and conditions of dentistry in England at the present time.

The telephone course got under way on January 6th with thirty members of the society registering. The clinic room at the Royal Jubilee Hospital has been made available for these sessions.

At the January meeting of the **Prince George and District Dental Society** these new officers were chosen: President—Dr. W. J. Aitken; Vice-President—Dr. J. D. McInnis; Secretary—Dr. D. E. Waller.

British Columbia has a widely scattered population except around the southern coastal area. Consequently it is encouraging to have an active society in a northern district. As an example of the enthusiasm evinced at Prince George we note that Dr. Amundsen of Vanderhoof attends regularly, and his attendance entails a 150-mile trip each time.

The 589 dentists of B.C. receive regular reports from the senior governing body, the **Council of the College of Dental Surgeons**. The Vancouver organization, comprising half of the dental personnel, have a summary at each monthly meeting given by a member of the Council. At the meetings of the other dental societies of the province the local representative on the Council also holds forth regularly. And to tie it all in, the News Bulletin of the B.C. Dental Association publishes in each issue a report by the Registrar, who comments upon examinations, complaints, prosecutions and many other matters that concern the B.C. dentist and his relation to his confreres and the public.

D. H. M.

Correspondence

Dr. J. Menzies Campbell writes:

PROFESSOR STANLEY G. GRAHAM

The pleasure experienced extends far overseas that Stanley Galbraith Graham, Professor of Child Health at the University of Glasgow, was, on November 1, 1954, unanimously and enthusiastically, elected to the high and honourable office of President of the Royal Faculty of Physicians and Surgeons of Glasgow—a body which was instituted by Royal Charter from James VI of Scotland in November 1599.

Dr. Graham, a Canadian, is the son of a Scot, Dr. Peter Graham, who emigrated to Ontario very many years ago. His brother, Dr. Roscoe Graham (whose tragic death occurred in January, 1950) will, probably, be better remembered by Graduates of the Faculty of Dentistry.

Born in 1895, Stanley Graham has had a distinguished academic career. In 1916, he graduated M.B. from the University of Toronto: eleven years later, being capped M.D. In 1925, he gained the Fellowship of the Royal Faculty of Physicians and Surgeons of Glasgow; and, in 1946, was elected to

the Roll of Fellows of the Royal College of Physicians of Edinburgh.

In 1923, Dr. Graham joined the staff of the Royal Hospital for Sick Children, Glasgow. In 1930, he was appointed Lecturer in Medical Diseases of Children at the University of Glasgow, and Visiting Physician (with the charge of wards) to the Royal Hospital for Sick Children. In 1948, he succeeded the late Dr. Geoffrey Fleming as Professor of Child Health at the University of Glasgow.

It is not surprising that many honours, too numerous to mention here, have deservedly fallen to the lot of Professor Stanley Graham. These include: President of the British Paediatric Society; Honourary Membership of the Canadian Paediatric Society; and Honorary Fellowship of the American Academy of Paediatrics.

The University of Toronto has every reason to be proud of Professor Stanley Graham being one of her graduates. We, in Great Britain, where his sterling qualities are so well-known, are delighted that such a busy person, as he undoubtedly is, should be prepared to render further and arduous services to his profession by becoming the President of the Royal Faculty of Physicians and Surgeons of Glasgow.

TENTATIVE PROGRAMME OF THE CANADIAN SOCIETY OF DENTISTRY FOR CHILDREN SATURDAY, MAY 14, 1955 ● ROYAL YORK HOTEL, TORONTO

Morning Session

- A Table Clinics—Two men in graduate studies from University of Michigan.
Two men from the Buffalo area.
- B Orthodontics—Dr. Popovich from Burlington.
- C Election of officers.

Luncheon

Afternoon Session

- A **Dentistry for Handicapped Children.**
Manuel M. Album—President of Academy for Oral Rehabilitation of Handicapped Persons; Chief of Dental Service of Philadelphia Society for Crippled Children and Adults; Associate Dentist, Children's Hospital, Phila.; Dental Staff Abington Hospital; Dental Consultant, Pennsylvania Society for Muscular Dystrophy Patients; Dental Consultant and member of Medical Advisory Board, Pennsylvania Society for Crippled Children and Adults.
- B **Symposium—advances in caries research**
Dr. K. J. Paynter—Diet and Tooth Morphology.
Dr. G. Nikiforuk—Blood and Salivary constituents in dental caries.
Dr. A. W. S. Wood—A new method of testing pulpal response to stimuli.

In Memoriam

Thomas Melanson — Dr. Thomas Melanson of Weymouth, N.S., passed away on January 3, 1955. He was 73.

Born in Corberrie, Digby County, Dr. Melanson received his early education at St. Anne's College, Church Point. He graduated from Tufts Dental College, and then practised in Yarmouth. He retired a few years ago, and moved to Weymouth.

Dr. Melanson was a strong supporter of St. Ambrose Church and St. Anne's College, and he was a Fourth Degree Member and Past Grand Knight of the Order of the Knights of Columbus.

He was also a former member of the Yarmouth Kiwanis Club, and a past president of the Yarmouth Curling Club. He served for some time on the Yarmouth Town Council, and was a school commissioner for several years.

Dr. Melanson is survived by one brother, Charles, of Corberrie, and one sister, Mary, of Boston. His wife, the former Marguerite Surrette, predeceased him several years ago.

F. Charles Dougan — Dr. F. Charles Dougan of Charlottetown, P.E.I., died on December 23, 1954, at the age of 55.

Born in Charlottetown, Dr. Dougan received his early education at Queen Square School and at St. Dunstan's College. He graduated from Tufts Dental College in 1923 and then returned to Charlottetown where he practised until his death.

Dr. Dougan was a member of Charlottetown Council, the Knights of Columbus, and the Holy Name Society of the St. Dunstan's Basilica. He served as a City Councillor for a period of 16 years, and from 1940-46 was Chairman of Streets for the City Corporation.

Dr. Dougan displayed a great interest in all types of athletics, and he was well known as one of Canada's outstanding harness racing authorities.

Surviving are his wife, the former Irene Dalton; six brothers, Richard and Joseph of Charlottetown, the Rev. Emmett Dougan in Nova Scotia, Rev. Louis Dougan, chaplain with the Royal Canadian Navy in Halifax, Frank, of Moncton, N.B., and Thomas of Western Canada; and one sister, Marion, also of Charlottetown.

Norman Robert Carter — Dr. Norman Robert Carter of Vancouver died on January 17th, aged 71.

Born in Winnipeg, Dr. Carter graduated from the University of Michigan in 1911. He practised in the Kootenay area until 1929, when he moved to Vancouver. Following his retirement in 1952 he was associated with the Metropolitan Health Committee.

Dr. Carter was a past president of the Spanish-Canadian Club, and a member of the Natural History Society.

He is survived by his wife, Catherine; a son, Norman of North Vancouver; two daughters, Mrs. R. Inglis of Vancouver and Mrs. Arthur Caldicott of Yellowknife; his mother, Mrs. Jennie Carter of Rodney, Ont.; a brother, four sisters, and eight grandchildren.

John Earl Moser — Dr. John Earl Moser of Toronto died whilst on a vacation trip at Chattanooga, Tennessee. He was 49.

Born in Blyth, Ontario, Dr. Moser graduated from the University of Toronto in 1930. He practised in Hamilton for 12 years, and then in Toronto.

Dr. Moser had recently been promoted to Professor of Dental Radiology at the University of Toronto.

He was a member of the Academy of Dentistry, Toronto, and of the North Toronto Dental Association. He was also a member of the United Church.

Dr. Moser is survived by his wife, Lesley a son, Kenneth; and a daughter, Patsy.

John Wesley Armstrong — Dr. John Wesley Armstrong of Toronto passed away on January 10, 1955. He was 84 years of age.

Born in Orangeville, Ontario, Dr. Armstrong received his early education in Toronto. He graduated from the Royal College of Dental Surgeons of Ontario in 1889, and he practised in Toronto from 1889-1941, and then in Chatham until 1950, when he retired and returned to Toronto.

Dr. Armstrong was an Honorary Member of the R.C.D.S., and a member of the Optometrist Club. He sang in church choirs for many years, and had been a member of Wesley United and Eglinton United Choirs in Toronto and St. Andrew's United Choir in Chatham.

Surviving Dr. Armstrong are two sons, Nelson and Ronald; two daughters, Audrey and Mrs. R. S. Dilworth, all of Toronto; and six grandchildren.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1 9 5 5	Toronto, Ontario	May 15th — 18th
1 9 5 6	Banff, Alberta	June 3rd — 6th
1 9 5 7	Winnipeg, Manitoba	June 23rd — 26th

FUTURE EVENTS

Date	Function	Location	Officer	Address
Mar. 18-20	International Association for Dental Research	Chicago	Dr. Dan Y. Burrill	129 E. Broadway, Louisville 2, Ky.
Mar. 21	Academy	Toronto	Dr. J. Bevan King	1416 Danforth Ave.
Mar. 21	Dental Club	Montreal	Dr. Gordon Kelly	1414 Drummond St.
Mar. 24	Academy	Toronto	Dr. J. Bevan King	1416 Danforth Ave.
Apr. 12	Montreal Alumni Chapter	Montreal	Dr. F. Vosberg	4965 Decarie Blvd.
Apr. 25	Dental Club	Montreal	Dr. Gordon Kelly	1414 Drummond St.
May 6-7	British Columbia Dental Association	Vancouver	Dr. R. E. Cline	925 W. Georgia St., Vancouver, B.C.
May 14	Canadian Society of Dentistry for Children	Toronto	Dr. D. R. Anderson	4925 Dundas St. W., Toronto.
May 15-18	Joint Convention C.D.A.-O.D.A.	Toronto	Dr. Don W. Gullett	234 St. George St., Toronto.
June 26-29	Western Canada Dental Society	Regina	Dr. W. K. Martin	708 Broder Bldg., Regina.
Aug. 14-20	Federation Dentaire Internationale	Copenhagen	W. Riis Klausen	1 Alhambravej, Copenhagen V.

SHORT GRADUATE COURSES

Date	Course	Location	Address
Mar. 24-26	Applied Anatomy	Loyola University, Chicago College of Dental Surgery	Dr. F. M. Wentz, Director, Post-graduate Division, 1757 West Harrison St., Chicago 12, Ill.
Mar 28-Apr. 1	Orthodontics	University of Toronto	The Dean, Faculty of Dentistry, University of Toronto, 230 College St., Toronto 2-B, Ont.
Apr. 11-15	Orthodontics (for the Specialist)	as above	as above
Apr. 25-29	Periodontics	as above	as above
Apr. 25-29	Full Denture Implants	Tufts College Dental School	Dr. Irving Glickman, Tufts College Dental School, Div. of Postgraduate Studies, 136 Harrison Ave., Boston 11, Mass.
May 2-6	Dental Oral Surgery & Anaesthesia	University of Toronto	The Dean, Faculty of Dentistry, University of Toronto, 230 College St., Toronto 2-B.

CLASS AND FRATERNITY FUNCTIONS

Class	Function	Date & Time	Place	Officer
2T3	32nd Reunion Dinner	May 16 6.30 p.m.	P.D.R. No. 9, Royal York Hotel	Colton Bliss, 170 St. George St., Toronto.
2T5	30th Reunion Dinner	May 16 6.30 p.m.	P.D.R. 8, Royal York Hotel	Lloyd M. Grose, 663 Greenwood Ave., Toronto.
3T0	25th Reunion Get-together Party (with wives)	May 15 4.00 p.m.	138 Lytton Blvd.	Bill Dewar, 138 Lytton Blvd., Toronto.
3T0	Reunion Dinner	May 16 6.30 p.m.	Library, Royal York Hotel	as above
3T5	20th Reunion	May 16 6.30 p.m.	Details later	Earl Bancroft, 86 Bloor St. W., Toronto.
4T0	15th Reunion	Further details later		Gordon Doan, 170 St. George St., Toronto.
5T0	5th Reunion Party	May 16 (Class members will be notified of further details)		Ewart A. Jones, 11 Barker Ave. Guelph, Ont.
5T1	Reunion Dinner	May 16	Details later	Lionel Metrick, Ste. 208, 150 Metcalfe St., Ottawa.
5T3	3rd Reunion Dinner	May 16 6.30 p.m.	P.D.R. 10 Royal York Hotel	C. G. Monteith, 2842 Bloor St. W., Toronto.
Alpha Omega Fraternity	Annual Closing Dinner	May 16 6.30 p.m.	Tudor Room, Royal York Hotel.	Ben Gross, 816 Bathurst St., Toronto.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

La coagulation sanguine et ses applications en chirurgie dentaire*

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J'ai accepté avec plaisir de venir vous parler de coagulation sanguine, et des maladies hémorrhagiques aujourd'hui assez bien différenciées et avec lesquelles vous êtes appelés un jour ou l'autre à être confrontés. Je crois que plusieurs d'entre vous ont connu l'inquiétude au sujet de patients qui après extraction dentaire ont présenté des hémorrhagies alvéolaires parfois très graves et qui ont nécessité l'hospitalisation pour transfusions de sang total ou encore de plasma frais. Bien entendu, il est assez rare aujourd'hui qu'un patient décède d'hémorrhagie à la suite d'extraction dentaire, mais ce fut malheureusement le cas dans le passé et ceci était dû naturellement à l'ignorance que nous avions du mécanisme intime des maladies hémorrhagiques. Grâce à quelques chercheurs, tels

que Owren, Seegers, Quick, Stéfanini, Rosenthal et combien d'autres encore, il nous est maintenant possible de cataloguer avec certitude certaines maladies hémorrhagiques et de prévenir autant que possible avec nos moyens actuels les dangers résultant d'intervention chirurgicale quelles qu'elles soient. Pour vous, messieurs, comme pour nous médecins, une collaboration étroite s'impose dans le plus grand intérêt de nos malades, et je serai grandement récompensé si je parviens ce soir à vous redonner confiance pour vos prochaines interventions, soit chez les hémophiles ou encore chez ces malades souffrant de troubles connexes. Il est loin le temps de Morawitz et d'Howell, les pionniers de la coagulation sanguine, où l'équation banale de la coagulation s'écrivait comme suit: prothrombine + thromboplastine + calcium $\rightarrow$ thrombine.

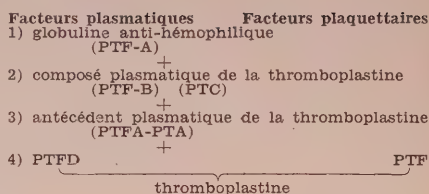
Thrombine + fibrinogène $\rightarrow$ fibrine.

Cette formule est celle que vous et moi avons appris à l'Université. Ce n'est que

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vers 1942 que le problème extrêmement complexe de la coagulation sanguine fut relativement simplifié par les découvertes de Owren, en Norvège, et Seegers, aux Etats-Unis. Depuis une décade, la science dans ce domaine a fait des pas de loup pour enfin expliquer le pourquoi de certaines hémorrhagies. Je suis convaincu qu'il nous reste encore beaucoup à apprendre, mais, à tout événement, il est de notre devoir d'exploiter en toutes fins pratiques le peu que nous connaissons. Ce n'est pas à moi de vous faire l'histoire des différentes étapes de la progression scientifique sanguine et je désire abrégier en vous présentant immédiatement les conceptions modernes de la coagulation sanguine. Je m'excuse d'emblée de vous servir un tel digestif, mais si je puis me faire assez clair, en suivant avec moi ces nouvelles données, vous saisirez toute l'importance du sujet et vous connaîtrez le pourquoi de ces troubles qui ont fait songer bien des chercheurs. Je grefferai sur le schéma, que je vous exposerai bientôt, la conduite, que humblement je vous propose de suivre à l'avenir avant toute intervention. Le traitement dépendra de la nature de la maladie en cause. J'ouvre ici une parenthèse pour vous dire que la façon dont j'envisage la coagulation sanguine est la résultante d'opinion personnelle et de celles puisées dans différentes théories préconisées par Owren, Seegers, Stéfani et autres.

Notre problème peut se simplifier si nous classifions les troubles hémorrhagiques en 3 catégories. Les premiers causés par une déficience en thromboplastine ou ses facteurs antécédents; les 2èmes par un manque de thrombine ou de ses précurseurs et, enfin, les derniers, par un manque d'édification de la fibrine. Je m'explique. La première catégorie intéresse la 1ère phase de la coagulation. Ces malades sont des hémophiles vrais ou des "pseudo hémophiles" encore appelés par les auteurs américains "hémophilic-like diseases." Voici donc le mécanisme qui nous intéresse pour l'instant.



Les hémophilies vraies sont habituellement considérées comme des maladies héréditaires reliées à une déficience d'un facteur unique, la globuline anti-hémophilique. C'est une maladie des mâles transmise par la femelle qui en porte le caractère récessif lié à son sexe. Pavlovsky, Koller, Aggeler, Schulman et Smith, Poole, Biggs et Rosenthal ont de leur côté démontré qu'à part les hémophilies vraies, il existait des maladies simulant ces dernières, mais que le facteur déficient était différent de la globuline anti-hémophilique. Ces auteurs sont arrivés à cette découverte en constatant que des plasmas de malades ayant le même syndrome hémophilique se corrigeaient mutuellement au point de vue coagulation. Malheureusement, la multiplicité des termes propres à chaque auteur n'a eu comme inconvénient que de compliquer le tableau et de rendre extrêmement confus un mécanisme relativement simple. Nous retiendrons, pour une plus grande clarté, la nomenclature proposée par Aggeler, les facteurs plasmatiques de la thromboplastine A.B.C.D. et, quant à la maladie qui découle d'une déficience de l'un ou de l'autre facteur, elle sera dite "hémophilie" A.B.C.D. selon le cas (Soulier, Stéfani.) De plus, et ceci est extrêmement important à retenir, nous reconnaissons des degrés de gravité de l'hémophilie et bien que le coagulogramme de routine soit normal, il ne faut jamais oublier qu'un individu ayant une histoire d'hémorrhagies puisse souffrir d'une variété d'hémophilie qui restera à déterminer par le coagulationisme au moyen de tests spéciaux. Nous y reviendrons.

Considérons maintenant la 2ème catégorie des maladies hémorrhagiques, celles qui résultent d'un manque de for-

mation de thrombine, soit par hypoprothrombinémie, hypoproconvertinémie ou encore par hypoproaccélélinémie. Je m'explique.

Thromboplastine + proconvertine + $\text{Ca}^{++} \rightarrow$ convertine

Prothrombine + convertine + $\text{Ca}^{++} \rightarrow$ thrombine

Thrombine + proaccéléline + $\text{Ca}^{++} \rightarrow$ accéléline

Prothrombine + thromboplastine + accéléline $\rightarrow$ thrombine

+ Ca^{++}
+ Convertine

Ces dernières maladies surviennent aussi bien chez la femme que chez l'homme et à des degrés différents de gravité. Ici, cependant, le taux de prothrombine est toujours anormal et nous pouvons déceler au laboratoire par des techniques spéciales, le facteur exact déficient en cause. Les individus porteurs de la maladie en phase manifeste présenteront des troubles spontanés. Les individus porteurs de la maladie en phase latente auront des manifestations hémorragiques qu'à la suite de traumatisme, par exemple, une extraction dentaire. L'histoire familiale de vos patients peut seule ici vous faire soupçonner une dyscrasie hémorragipare possible. Le coagulationisme pourra alors infirmer ou confirmer votre hypothèse. Quant à la dernière phase de la coagula-

tion, c'est-à-dire la gélification du fibrinogène en fibrine par la thrombine, les troubles qui découlent d'une déficience en fibrinogène sont assez rares et se rencontrent surtout chez l'enfant. Diamond a rapporté des cas d'affibrinogénémie et d'hypofibrinogénémie, mais je n'ai personnellement jamais eu à traiter de tels cas. Seuls les pédiâtres et les dentistes affiliés aux hôpitaux pour enfants ont l'avantage de connaître cette anomalie. Je passe sous silence les autres troubles hémorragiques des purpuras thrombocytopéniques et des leucémies.

Pour résumer la question et dans le but de diriger le diagnostic, j'ai cru bon de synthétiser sous forme de tableau les analyses de coagulation anormales pour chaque maladies hémorragipares en particulier.

Je dois maintenant ouvrir une parenthèse pour mentionner qu'il existe d'autres causes aux hémorragies que celles déjà décrites. C'est un chapitre à part, très peu connu et nous compliquant singulièrement la vie! Ce sont les anticoagulants spontanés pouvant agir sur un facteur en particulier des deux premières phases de la coagulation. Je vous en fait grâce.

J'arrive maintenant au point le plus pratique de ma conférence, celui du traite-

Variations du coagulogramme dans les maladies hémorragipares

	Temps saig.	Temps coag.	Temps proth.	Plaques.	Lacet	Rétr. caillot	Fibrinogène	Cons. Proth.	Thromb. Generat.
Hémophilie A.....	N.	A.	N.	N.	N.	N.	N.	A.	A.
" B.....	N.	N.A.	N.	N.	N.	N.	N.	A.	A.
" C.....	N.	N.A.	N.	N.	N.	N.	N.	A.	A.
" D.....	N.	?	N.	N.	N.	N.	N.	A.	A.
Thrombocyttémie									
Thrombasténie.....	A.	N.	N.	D.	P.	A.	N.	A.	A.
Hypoprothrombinémie.....	N.	N.A.	A.	N.	N.	N.	N.	N.	N.
Hypoproconvertinémie.....	N.	N.A.	A.	N.	N.	N.	N.	A.	A.
Hypoproaccélélinémie.....	N.	N.A.	A.	N.	N.	N.	N.	A.	A.
Afibrinogénémie									
Hypofibrinogénémie.....	N.	A.	A.	N.	N.	A.	D.	N.	N.
Troubles vasculaires (Von Willebrand).....	A.	N.	N.	N.	N.A.	N.	N.	N.	N.

N—Normal A—Allongé D—Diminué P—Positif.

ment préventif et immédiat de ces maladies. Comment préparer ces individus à subir une intervention dentaire ou autre qui relève de votre spécialité dépendra nécessairement de la nature exacte de la maladie. Chaque facteur de la coagulation a ses propres propriétés, les uns sont utilisés au moment de la coagulation, les autres sont plus actifs après la coagulation et sont retrouvés presque en totalité dans le sérum humain.

Les hémophiles peuvent être préparés par des transfusions de plasma frais ou de sérum humain pour ce qui est des catégories B C et D. Quant aux hémophiles vrais ou encore les hémophiles A, il faut agir avec une très grande circonspection et s'abstenir le plus possible. La globuline anti-hémophilique est utilisée lors de la coagulation et disparaît assez vite en circulation. Ces malades doivent présenter un temps de coagulation normal avant toute intervention. Il est sans doute plus certain d'extraire une dent à la fois

et répéter les extractions, car il est beaucoup plus facile de contrôler l'hémorragie d'une alvéole que de plusieurs. Il incombe en somme aux médecins de voir à préparer les patients. Quant au traitement local, vous y êtes plus directement intéressés. Je préconise d'emblée de faire un pactage alvéolaire soit avec de la thrombine topique ou encore vous pouvez utiliser un produit relativement nouveau sur le marché, une solution de venin de vipère Russell. Ce pansement doit être changé toutes les 24 heures, avec délicatesse pour ne pas précipiter l'hémorragie locale. En terminant, il faut admettre, qu'il est de 1ère importance que le médecin et le dentiste collabore étroitement afin de prévenir tout danger d'intervention chez ces malades. De cette façon, nous éviterons les complications d'ordre majeure et si malheureusement il en existe, elles seront je l'espère, très minimes et faciles à remédier.

Hotel-Dieu de Montréal

Congrès de l'Association dentaire canadienne

Exposition artistique

Au cours des années dernières, l'exposition d'objets d'art a toujours occupé une place importante au sein des attractions du congrès national des dentistes canadiens.

Encore cette année, le Congrès de l'Association dentaire canadienne, qui aura lieu à Toronto, du 14 au 18 mai inclusivement, exposera les oeuvres d'art réalisées par les dentistes du Canada ou par les personnes de leur entourage. On invite donc tous les dentistes, les membres de leur famille ou ceux qui collaborent au travail du dentiste (vendeurs de produits dentaires, techniciens, assistantes ou hygiénistes) de soumettre leurs travaux artistiques pour cette exposition: peintures à l'huile, aquarelles, sculptures, photographies, pièces d'artisanat, coulées de miniatures, etc.

Chaque catégorie d'oeuvres d'art sera l'objet d'un concours et on remettra aux gagnants des prix appropriés.

**Pour tous renseignements, on écrit au docteur Maxwell N. Rockman,
436 Palmerston Blvd., Toronto, Ont.**

ÉDITORIAL

Le public regarde le dentiste

"Le dentiste ne peut plus s'isoler dans une tour d'ivoire. Il doit se mêler à ses concitoyens, prendre une part active aux organisations sociales de son entourage, s'intéresser et participer à la vie communautaire de la municipalité qu'il dessert, de la ville, du quartier qu'il habite."

Ces conseils que donnait le président de l'Association dentaire américaine, le docteur L. M. Fitzgerald, aux dentistes canadiens réunis en congrès à St-André-sur-mer, l'automne dernier, sont le fruit d'observations faites par des hommes qui savent s'élever au-dessus du terre-à-terre quotidien pour synthétiser les réactions psychologiques des relations humaines. Les membres de la profession dentaire ont reçu une instruction supérieure à celle des composants de notre population; ces privilèges leur ont conféré des droits et ces droits leur imposent des obligations professionnelles et sociales.

D'une façon générale, les dentistes s'acquittent bien, Dieu merci, de leurs devoirs professionnels; ils traitent leurs patients avec intelligence, probité et conscience, mais là ne se bornent pas les services qu'ils doivent à leurs semblables: il faut qu'ils apportent leur concours à l'amélioration des états d'existence de la communauté sociale, dont ils font partie.

Il y a mille raisons pour que le dentiste collabore à l'édification d'une cité meilleure, mais contentons-nous ici de mentionner l'intérêt que le dentiste lui-même —et partant tout le groupe professionnel—peut retirer de ces contacts avec ses voisins d'autres métiers et d'autres professions que le sien.

On sait que pour une foule de motifs plus ou moins sérieux, la population du Canada souhaite l'étatisation des professions qui s'occupent de la santé. Des partis politiques à tendances socialisantes attisent ce désir au cours de campagnes électorales et même en Chambre, où on grossit des abus de médecins et des dentistes et où on embellit à souhait les avantages que le contrôle des professions libérales procurerait aux habitants de ce pays.

Le public accuse aussi la profession dentaire de rendre trop difficiles les qualifications exigées de ceux qui veulent exercer dans nos provinces et il prétend que les dentistes agissent ainsi pour maintenir bas le nombre de dentistes de façon à ce que ceux-ci puissent fixer des honoraires plus considérables pour leurs traitements...

Ces sentiments du public à notre égard influence la législation sanitaire des différentes parties du Canada, puisque leurs représentants électoraux tiennent compte—il ne faut pas en douter—des réactions de leurs électeurs en face de problèmes de cette envergure.

Un exemple illustrera la puissance de l'opinion publique sur les décisions d'un organisme gouvernemental. Dans le territoire d'Alaska, qui, comme on le sait, appartient aux Etats-Unis, il y a pénurie de dentistes et de médecins. Or, l'été dernier, on a inscrit à la Législature de ce territoire un projet de loi pour former un Bureau d'Examen, composé de profanes, qui ferait subir des épreuves aux candidats à l'exercice dentaire et médical et qui décernerait des diplômes.

Grande serait la portée de cette loi! Elle enlèverait d'abord aux professions concernées le contrôle qu'elles ont toujours exercé, de droit, sur l'admission des nouveaux candidats; ensuite, elle abaisserait les standards des qualifications exigées des aspirants dentistes et elle octroierait en grand nombre des diplômes de compétence.

Or cette législation est le fruit de récriminations et de représentations faites par la population auprès des gouvernements!

Le dentiste peut donc par ses contacts avec ses concitoyens leur faire connaître les

points de vue de la profession et leur exposer les avantages qu'ils retireraient de la mise en acte des opinions de la profession dentaire.

Le dentiste, en se mêlant à son entourage, peut par son exemple et ses conseils prouver à la population que la profession dentaire est bien disposée à son égard et qu'elle ne tend qu'à la bien servir.

On l'a dit souvent: le meilleur agent la profession dentaire pour développer de bonnes relations extérieures avec le public est toujours le dentiste, qui, dans son cabinet et dans son milieu, agit comme un gentilhomme, rend service à ses semblables et joue consciencieusement son rôle de citoyen.

GERARD DE MONTIGNY

Présentation d'un certificat de professeur honoraire de la Faculté de chirurgie dentaire de l'Université de Montréal au docteur Harry M. Seldin.



Photographie d'un groupe de dentistes qui ont suivi un cours de perfectionnement en chirurgie et en prothèse donné par les docteurs Harry M. Seldin et M. A. Pleasure, de New York.

Durant une séance d'études, on a présenté au docteur Harry M. Seldin un diplôme de professeur honoraire de la Faculté.

Sur la première rangée, on remarque de g. à d., les docteurs Paul Dionne, de Joliette, I. Seigel, de Toronto, Mgr Olivier Maurault, recteur de l'Université, les docteurs Norman Butterman, Harry M. Seldin, Ernest Charron, doyen, Sydney Hornstein, de Montréal, M. A. Pleasure, Gérard de Montigny.

Deuxième rangée, de g. à d., les docteurs Adolphe L'Archevêque, Rodolphe Talbot, de Québec, Marshall D. Vaughters, de Philadelphie, E.U., Viger Plamondon, de Québec, Roger Charette, André Dalpé, Jean Nadeau, L. P. Dubé, de Québec, Marc Y. Trépanier, de Valleyfield.

Troisième rangée, de g. à d., les docteurs Claude Baril, Léon Copnick, Edouard Gervais, de Joliette, Jean Fontaine, Médéric Robichaud, Lt-Colonel McCrary.

Le diagnostic en chirurgie dentaire*

par J. J. RIVES, D.D.S., New York.

S'il est un enseignement difficile et indispensable à recevoir durant nos études de chirurgie dentaire, c'est bien celui qui a trait au diagnostic. A celui qui débute, dans une spécialité comme la nôtre, il importe d'épargner des tâtonnements décevants, de faciliter l'assimilation des cours et des ouvrages de pathologie et surtout il importe d'apprendre à examiner les malades, nos patients. A celui qui aborde la clinique pour la première fois, il faut indiquer la conduite à tenir dans toutes les circonstances qui peuvent se présenter dans la pratique générale.

Beaucoup de dentistes, nos aînés, qui ont franchi depuis longtemps l'étape décisive du doctorat, beaucoup, dis-je, ont dans leur esprit une image sombre de la période ingrate de leurs premiers pas autour du fauteuil. Ils ont aussi un souvenir quelquefois pénible de leurs premiers contacts avec leurs patients dans leur nouveau bureau fraîchement installé.

C'est pour aider à éviter la cause de ces ennuis que nous avons voulu revoir brièvement les principales notions qui nous conduisent par un bon examen à un diagnostic exact.

Notre grand maître Larousse nous dirait que le mot "diagnosis" en grec signifiant connaissance, le mot "diagnostic" en français, indique une partie de la médecine qui s'attache à reconnaître les maladies d'après leurs symptômes. De ce fait, le diagnostic dicte le traitement des maladies. C'est une science qui obéit à des règles bien précises, une science qui s'apprend et où rien ne doit être laissé au hasard. C'est aussi un art qui fait appel à des qualités personnelles d'intelligence et de réflexion, qualités elles-mêmes perfectibles. Cette science est indispensable non seulement à l'étudiant s'il veut bien employer son temps durant son passage à la faculté et ne pas laisser fausser son

esprit dès l'origine, mais elle est aussi indispensable au dentiste praticien. Or, savoir, en partant des symptômes, reconnaître exactement une maladie est souvent plus difficile que de traiter une maladie une fois connue. La pratique du diagnostic et sa connaissance pleine et entière fera du débutant un futur clinicien, un dentiste qui sera expérimenté et ne sera pas seulement un technicien.

Pour aller des symptômes, des phénomènes morbides à la maladie, l'esprit passe par deux étapes: une étape analytique qui consiste en un examen consciencieux, méthodique et complet du patient, une étape synthétique par laquelle le praticien, groupant les signes recueillis à l'examen, les rattache à une maladie connue par lui et en formule le diagnostic. Pour ces deux étapes, si bien doué soit-il, l'esprit ne découvre que ce qu'il sait pouvoir découvrir. Il faut donc nécessairement qu'il soit armé au préalable de toute une série de connaissances, celles-ci sont le résultat de nos études antérieures et découlent de l'enseignement reçu en anatomie, physiologie, histologie, pathologie générale et dentaire. Quelques exemples vous en illustreront la nécessité.

Il faut connaître l'anatomie, c'est-à-dire l'état normal des organes que l'on aura à explorer, car les modifications de cet état normal constituent les signes objectifs ou physiques qui conduisent à préciser le siège et la nature des lésions. Ainsi, en face d'une gingivite hypertrophique, l'anatomie normale nous indique par comparaison le volume, la coloration, en un mot l'aspect superficiel que devrait avoir une gencive normale et par cela même, nous fait apparaître les modifications pathologiques. En présence d'une atrésie bi-maxillaire ou d'une torus palatinus, et bien d'autres cas pathologiques, les sciences médicales de base nous rendront le même service. Enfin, les signes isolés, modifications physiques et troubles fonctionnels, constituent un ensemble de symptômes, un syndrome que la connais-

*Travail préparé dans le service du Diagnostic de la faculté Chirurgie dentaire de l'Université de Montréal.

sance de la pathologie nous fera rattacher à une affection spéciale. La connaissance de l'évolution d'une maladie pourra nous permettre, quelquefois, d'en faire le diagnostic d'après la seule énumération faite par le patient des étapes de son mal et des douleurs qu'il a ressenties. On voit combien il est utile posséder les connaissances médicales de base pour examiner utilement un patient.

Ces notions acquises, l'étudiant pourra faire de la clinique. Il apprendra à interroger le patient, à l'examiner, à recueillir les résultats des examens complémentaires, en un mot, il apprendra à faire l'analyse clinique du cas qui lui est soumis. Cette analyse est essentiellement constituée par l'observation des troubles présentés par le patient. Observer, c'est utiliser correctement tous ses sens pour bien constater tous les symptômes. A cet exercice, tout le monde n'est pas également apte: il n'est pas suffisant d'être naturellement observateur pour faire de bonnes observations. Il faut acquérir et développer certaines qualités d'esprit indispensables. Tout d'abord une méthode est nécessaire, l'observation ne saurait être poursuivie au hasard. Il faut s'en tenir aux quatre préceptes de Descartes et s'imposer à soi-même une discipline stricte, c'est-à-dire:

- 1) Ne recevoir jamais aucune chose pour vraie, que je ne la connusse évidemment être telle, et éviter soigneusement la précipitation et la prévention;
- 2) Diviser chacune des difficultés en autant de parcelles qu'il se pourrait et qu'il serait requis, pour les mieux résoudre;
- 3) Conduire par ordre ses pensées, en commençant par les objets les plus simples et les plus aisés à connaître, en supposant même de l'ordre entre ceux qui ne se précèdent point naturellement les uns les autres;
- 4) Faire partout des dénombrements si entiers et des revues si générales que je fusse assuré de ne rien omettre.

Descartes ne semble-t-il pas indiquer au clinicien lui-même les règles et la méthode qu'il doit suivre pour aboutir à un diagnostic sûr et impeccable. La méthode s'impose donc ici d'une façon absolue. Il faut suivre un plan d'interrogation et

d'examen comportant une série bien précise de gestes et de questions. Cette précision est indispensable, elle doit aller jusqu'à la minutie. Ainsi rien ne restera dans l'ombre, l'interrogatoire et l'examen étant méthodiques, précis et complets, l'observation ne devra rien omettre. Les fiches élaborées dans chaque service de notre faculté ont le mérite de correspondre à ce souci-là.

Etudions maintenant les principales phases de l'examen clinique en pratique générale. Cet examen doit commencer par l'interrogatoire. Le patient est une personne qui a des renseignements à nous donner. Il est utile de les recueillir avant de lui faire ouvrir la bouche pour y introduire immédiatement toutes sortes d'instruments. Il faut s'enquérir tout d'abord de la cause qui l'a amené à venir nous consulter. Il nous indiquera un symptôme qui l'inquiète et qui constitue un des faits saillants dans l'histoire de sa maladie; d'abord, nous nous intéresserons aux signes physiques et objectifs: sensations anormales, douleurs ressenties spontanément ou à l'occasion de contacts avec des liquides de différentes températures, contacts avec des substances acides ou sucrées. Enfin, les signes généraux doivent nous indiquer les répercussions de l'affection sur l'équilibre général.

L'interrogatoire doit se terminer par le rappel des phénomènes précédant la maladie, son mode de début, enfin par des questions touchant les antécédents personnels ou héréditaires.

Nous en arrivons à l'examen clinique proprement dit. Celui-ci varie suivant la spécialité du praticien. Il est évident qu'un spécialiste en prothèse complète n'agira pas comme un spécialiste en chirurgie maxillo-faciale, ou comme un spécialiste en pédodontie. Prenons comme exemple un praticien de pratique générale.

Trois stades d'examen sont à considérer: l'examen exo-buccal, l'examen endo-buccal, examen de l'état général.

1) *Examen exo-buccal:*

L'examen comprend:

- a) L'inspection qui nous fait constater la possibilité d'asymétrie faciale, d'acci-

dents infectueux, chroniques ou aigus, de phénomènes inflammatoires. Donnés par la vue, ces signes nous indiqueront la modification de couleur des téguments et de ses annexes.

- b) La palpation qui nous permet de procéder à des comparaisons entre le côté sain et le côté malade, de chercher la consistance et l'étendue des tumeurs ou des fluxions, de vérifier la nature des fluctuations dans les collections liquides, kystiques ou autres, d'examiner les ganglions lymphatiques des régions géniennes et autres régions.
- c) En dernier lieu, viendra la percussion qui nous sera utile dans certaines affections du plancher buccal.

2) *Examen endo-buccal*: Celui-ci commencera par l'étude du mouvement d'ouverture de la cavité buccale qui peut présenter des modifications possibles dues au trismus dans les affections aiguës dues à une constriction des mâchoires dans les affections chroniques.

- a) Examen du système dentaire: On notera le degré et le nombre des caries, leur localisation. La persistance des dents de lait à un âge adulte, la présence de dents réduites à l'état de racines. On examinera les régions des dents de sagesse. On notera la mobilité des dents, la présence de calculs. On déterminera les variations anormales des plans occlusaux. On étudiera les douleurs spontanées ou provoquées par la percussion verticale ou transversale appliquée aux dents. Enfin, la sensation de choc en retour systématiquement provoquée sur toutes les dents dévitalisées nous indiquera, en plaçant la pulpe du doigt dans la région apexienne et en frappant dans le sens vertical de la dent avec un instrument, la possibilité de lésions apicales ou périapicales.
- b) Examen des gencives: On notera les décollements gingivaux, la couleur, la texture de la muqueuse, l'existence et la profondeur des sacs, la présence des suppurations et des ulcérations.
- c) Examen de la muqueuse buccale: Il consistera en l'exploration de celle-ci au niveau de tous les organes de la cavité buccale.
- d) Examen du plancher buccal: Celui-ci se fait par le palper bi-manuel. Il servira à déceler les troubles des glandes salivaires, calculs ou infections du canal de Warton, ainsi qu'à confirmer les infections inflammatoires ou tumorales déjà découvertes dans l'examen exo-buccal.

e) Examen de la langue: La consistance de celle-ci est très utile dans l'étude des tumeurs qui peuvent l'affecter.

f) Examen de la région pharyngienne: Importante dans l'angine de Vincent, puisque les cryptes amygdaliennes peuvent être des zones d'incubation idéales pour les organismes de Vincent.

g) Examen des maxillaires: Noter les asymétries possibles, vérifier l'articulé dentaire, la palpation des remparts ou parois alvéolaires facteur important dans les lésions inflammatoires ou tumorales.

3) Nous en arrivons au dernier stage, l'examen de l'état général. L'apparence générale du patient nous indiquera sa résistance à l'affection. Suivant le cas, il nous renseignera sur la nécessité de mettre notre patient en contact avec son médecin traitant.

Des examens complémentaires, que l'on ne pratiquera qu'après un examen clinique complet, nous seront certains indispensables. Je veux parler de la radiographie, d'autres accessoires, comme les épreuves de laboratoires, les analyses de sécrétions ou de pus, tests sérologiques.

Ayant procédé avec soin à l'interrogatoire et à un examen clinique comme nous l'avons indiqué, le dentiste, grâce à la synthèse de tous les éléments donnés par les symptômes dûment constatés pourra, après avoir écarté les différents diagnostics différentiels, en arriver à un diagnostic positif. Cette gymnastique intellectuelle lui procurera d'abord une satisfaction d'ordre purement psychologique, ensuite la gratitude de ses patients qu'il aura soulagés grâce à un traitement exact et approprié.

Ayons toujours présent à l'esprit que la chirurgie dentaire, notre profession, est une des spécialités de la médecine; les répercussions inévitables de toutes les affections et maladies constitutionnelles sur les muqueuses buccales en sont la preuve évidente. Et comme le disaient dernièrement les docteurs Schour et Massler de l'Université de l'Illinois, les adultes après trente ans perdent leurs dents non pas tant à cause des ravages de la carie dentaire, mais à cause des

troubles gingivaux qui les frappent. Une connaissance, le plus approfondie possible, de la pathologie est donc indispensable.

Pour terminer, je vous dirai que dans tout examen clinique, il faut et avant tout, faire preuve de patience, le faire avec la plus grande douceur. A la clinique comme en clientèle privée, le patient n'est pas un terrain d'expérience. Riche ou pauvre, c'est un être sensible, inquiet et souffrant.

On peut exercer fort bien son métier de dentiste sans cesser d'être bon. Enfin, la qualité dominante sera le sang-froid, la pondération alliée avec de saines qualités de jugement, de sagacité, de coordination dans les idées. En un mot, du bon sens.

Toutes ces qualités ne sont faites que de nuances, mais elles feront de vous un bon clinicien et un dentiste bien considéré par ses patients et par ses confrères.

Nouvelles de l'Association

Réunion annuelle de 1955

Le Bureau des Gouverneurs se réunira à Toronto du 11 au 14 mai et le congrès aura lieu du 15 au 18 mai 1954. La livraison de mars du Journal renfermera le programme en entier du Congrès. On s'attend à ce qu'une assistance-record assiste à ce congrès. On peut aider au Comité du Congrès dans son travail en s'enregistrant à l'avance. On peut trouver dans le Journal, à partir de la livraison de janvier, des formules pour s'enregistrer.

Croix-Bleue

Les membres de l'A.D.C. qui en font pas encore partie du groupe de la Croix-Bleue pourront s'y inscrire en juin 1955. On a choisi cette date pour permettre aux nouveaux diplômés de joindre le plan. Il en sera ainsi chaque année, pour que les nouveaux membres de l'A.D.C. deviennent assurés dans la Croix-Bleue. Quoique la chose n'ait pas encore été décidée officiellement, il se peut que la Croix-Bleue ne puisse pas accepter les membres actuels de l'A.D.C. après le 1er juillet. La moyenne d'âge des membres qui participent actuellement au plan est de 50 ans et à cause de cet état de chose, la Croix-Bleue croit qu'elle ne pourra qu'accepter à l'avenir les nouveaux membres de l'Association pour sauvegarder les intérêts de ceux qui sont inscrits dans son organisation. Au cas où il en serait ainsi, les dentistes qui se proposent de s'inscrire au plan de la Croix-Bleue de l'A.D.C. feraient bien de le faire au mois de juin, au plus tard le 1er juillet, car il se peut qu'après cette date ils soient refusés à jamais. Cette décision de la Croix-Bleue est très importante. On peut s'inscrire en aucun temps d'ici la fin juin en écrivant à M. E. L. R. Williamson, B. P. 70, Brockville, Ontario.

Fédération dentaire internationale

Grâce à la participation de l'Association dentaire canadienne à la Fédération den-

taire internationale, les dentistes canadiens ont le privilège de devenir membres supporteurs de la F. D. I. Ce titre donne droit à un abonnement au Journal de la Fédération. Ce journal, qui paraît quatre fois par année, est un très bon périodique qui envisage la dentisterie sur le plan mondial. Les activités de la F. D. I. ont besoin et méritent l'appui de tous. L'année fiscale de la Fédération commence en janvier. La cotisation pour le Canada est de \$9.00, par année. On fait les chèques payables au docteur Don W. Gullett, qui est le trésorier national de la F. I. D. et on les adresse à 234 rue St-Georges, Toronto, Ont.

Onzième congrès dentaire international, à Rome, en 1957

Ce congrès aura lieu du 7 au 14 septembre 1957, dans l'Edifice des Congrès sur le site de l'Exposition Universelle de Rome. On a retenu dans les hôtels de cette ville 4,500 chambres à cette intention. Le Président de la République italienne a accordé son patronage à cette manifestation. Le comité d'organisation, sous la présidence du sénateur L. Benedetti, rapporte que son travail marche bien. On prie les membres de l'A.D.C. que se proposent d'assister à ce congrès d'en avertir le Secrétariat pour que celui-ci puisse leur faire parvenir toutes les nouvelles ayant trait à cette réunion.

Si un nombre suffisant de dentistes canadiens manifeste le désir d'assister au congrès, et de visiter l'Europe, il sera peut-être possible d'organiser un voyage collectif.

Notes

—Le docteur Anderson, président de l'A.D.C. a rendu visite à la Société de Stomatologie de Québec, le 17 janvier, 1955.

—Le Conseil d'Enseignement dentaire s'est réuni au Secrétariat de l'A.D.C., à Toronto les 27 et 28 janvier.

—L'Exécutif de l'A.D.C. se réunira à Toronto, les 24 et 25 mars.

—Le président de l'A.D.C. a visité les en-

droits suivants durant les deux derniers mois:

- Association dentaire de Terre-Neuve, les 31 janvier et 1^{er} février.
- Association dentaire du Manitoba, le 21 février.
- Société dentaire de Saskatoon, le 23 février.
- Société dentaire d'Edmonton, le 24 février.
- Société dentaire de Calgary, le 25 février.
- Société dentaire de Victoria, le 28 février.
- Société dentaire de Vancouver, le 1^{er} mars.
- Vallée de l'Okanagan, à Penticton, le 3 mars.
- Société dentaire de Lethbridge, le 5 mars.
- Société dentaire de Regina, le 7 mars.

Notes sur la fluoruration

Brandon, Man.—Le 6 décembre 1954, le conseil de ville a voté pour la fluoruration et l'appareillage sera installé dans deux mois.

Kelowna, C.-B.—Les citoyens ont voté en faveur de la fluoruration le 9 décembre 1954.

Westwold, C.-B.—Les francs tenanciers ont voté contre la fluoruration au début de décembre.

Smithers, C.-B.—On a approuvé la fluoruration, en décembre, par un vote de 3 à 1.

Saskatoon, Sask.—On a annoncé que la

fluoruration doit commencer au début de février.

London, Ont.—Le service de santé a approuvé la fluoruration, le 11 janvier.

Montreal, Qué.—Le Comité Exécutif a demandé un rapport sur le système qu'on doit choisir pour fluorer l'eau de l'aqueduc.

Toronto.—Le nouveau maire Phillips a annoncé que la fluoruration de l'eau était inscrit à son programme pour 1955.

Acquisitions récentes de la bibliothèque

FINK, D.E.: Release from nervous tension. 1953. 268p.

JACOBSON, E.: You must relax. 1948. 282p. illus.

JENKINS, G. N.: The physiology of the mouth. 1954. 288p. illus.

MORLEY, M. E.: Cleft palate. 1954. 173p. illus.

OSBORNE, J., and LAMMIE, G. A.: Partial dentures. 1954. 374p. illus.

THOMA, K. H.: Oral pathology. 1954. 1536p. illus.

WHEELER, R. C.: Tooth form drawing and carving. 2nd ed. 1954. 106p. illus.

Relevé sur l'économie de l'exercice dentaire

La troisième tranche du rapport sur l'économie de l'exercice dentaire au Canada, traitant des revenus comparés à l'équipement et le temps consacré à la clientèle, paraît dans cette livraison de mars du Journal. La quatrième partie étudiant les revenus en rapport avec le personnel auxiliaire des bureaux et du genre de pratique paraîtra en avril. On espère pouvoir compléter l'analyse des données de l'enquête en cinq parties.

Revenu comparé à l'équipement et le temps

a) Revenus comparés à l'équipement

D'après les réponses reçues, plus de 50% des dentistes disposent d'un seul fauteuil dans leur cabinet; mais ceux qui disposent de deux fauteuils ont un revenu moyen plus élevé. Un petit nombre de dentistes utilisent trois ou quatre fauteuils, tirant de là des revenus plus considérables. Le nombre de ceux qui possèdent cinq fauteuils est tellement petit qu'on ne peut calculer des chiffres de revenus d'une façon satisfai-

sante. Le tableau VII nous offre ces renseignements.

TABLEAU VII

Dentistes travaillant pour eux-mêmes

Moyenne du revenu net pour 1953—Nombre de fauteuils

Nombre de fauteuils	Pourcentage des dentistes	Moyenne du revenu net
Vide.....	.2	3718
1.....	53.6	6508
2.....	41.5	8793
3.....	3.9	9156
4.....	.6	11328
5.....	.2	7115
	100.0	7582

enquête sur l'économie de l'exercice dentaire '54.

Le tableau VIII nous donne les rapports des appareils de radiographie avec les revenus d'un cabinet dentaire. Il faut noter que 90% des cabinets dentaires disposent maintenant d'appareils de radiographie et ces bureaux montrent des revenus plus considérables que ceux n'ont pas d'appareil de radiographie.

TABLEAU VIII

Dentistes travaillant pour eux-mêmes
Moyenne du revenu net pour 1953—Appareil de radiographie

Appareil de radiographie	Pourcentage des dentistes	Moyenne du revenu net
Vide.....	.4	3785
Oui.....	89.8	7856
Non.....	9.8	5120
	100.0	7582

enquête sur l'économie de l'exercice dentaire '54.

Un peu plus de 18% de ceux qui ont répondu au questionnaire disent qu'ils possèdent des appareils à anesthésie générale. A l'encontre des chiffres compilés au sujet des appareils de radiographie et de fauteuils supplémentaires, les dentistes qui disposent d'appareils à anesthésie montrent des revenus qui sont de 16% moindres que ceux qui n'ont pas de ces appareils. (Tableau IX)

TABLEAU IX

Dentistes travaillant pour eux-mêmes
Moyenne du revenu net pour 1953—Appareils à anesthésie

Appareil à anesthésie	Pourcentage des dentistes	Moyenne du revenu net
Vide.....	1.3	4984
Oui.....	18.3	6729
Non.....	80.4	7820
	100.0	7582

enquête sur l'économie de l'exercice dentaire '54.

b) Revenus comparés au temps

Plus de 50% des dentistes rapportent que la durée moyenne de leurs rendez-vous est de 45 minutes. Seulement 1% des dentistes rapportent que leurs rendez-vous durent environ une demi-heure. La moyenne des revenus de ceux qui accordent des rendez-vous de 45 minutes est supérieure à celle de ceux qui donnent des rendez-vous pour des sommes de temps différentes. (Tableau X)

TABLEAU X

Dentistes travaillant pour eux-mêmes
Moyenne du revenu net—Durée des rendez-vous

Moyenne de la durée des rendez-vous	Pourcentage des dentistes	Moyenne du revenu net
30 minutes.....	1.0	7462
45 minutes.....	53.4	8315
1 heure.....	34.0	8909
Plus d'une heure.....	10.8	6332
Vide.....	.8	4214
	100.0	7582

enquête sur l'économie de l'exercice dentaire '54.

En réponse à la question qui demandait combien de semaines le dentiste a con-

crées à sa clientèle durant 1953, 20% des dentistes ont dit avoir travaillé 48 semaines. La plus haute moyenne des revenus nets (excepté ceux qui ont répondu avoir travaillé 43 semaines — dont le nombre est d'ailleurs restreint) se trouve chez le 10% de ceux qui disent avoir consacré 48 semaines; la seconde plus haute moyenne se voit chez le 8% de ceux qui rapportent avoir travaillé 46 semaines. Le tableau XI montre ces données.

TABLEAU XI

Dentistes travaillant pour eux-mêmes
Moyenne du revenu net pour 1953—Nombre de semaines de travail

Nombre de semaines de travail	Pourcentage des réponses	Moyenne du revenu net
52.....	4.6	6516
51.....	2.3	7046
50.....	13.6	7249
49.....	13.6	7746
48.....	20.1	8070
47.....	10.0	9055
46.....	7.8	8776
45.....	6.1	7978
44.....	4.4	8523
43.....	1.5	4066
42.....	2.2	7255
41.....	1.1	8756
Moins de 41.....	12.7	4841
	100.0	7582

enquête sur l'économie de l'exercice dentaire '54.

Dans le tableau XII, on aperçoit le temps perdu par la maladie ou l'impotence. Plus de 50% de dentistes n'ont pas perdu de temps, à cause de ces facteurs, en 1953. 31.1% des dentistes canadiens ont dû s'absenter une semaine, 12.5%, d'une semaine à un mois, 3.6%, plus d'un mois.

TABLEAU XII

Dentistes travaillant pour eux-mêmes
Nombre de jours d'absence en 1953—Maladie ou impotence

Nombre de jours d'absence	Pourcentage des dentistes	Pourcentage cumulatif
0.....	51.8	51.8
1.....	3.7	55.5
2.....	7.1	62.6
3.....	5.7	68.3
4.....	3.9	72.2
5.....	4.1	76.3
6.....	3.0	79.3
7.....	4.6	83.9
8-12.....	5.6	89.5
13-17.....	3.0	92.5
18-22.....	2.1	94.6
23-27.....	.3	94.9
28-32.....	1.5	96.4
33-44.....	1.3	97.7
45-54.....	.3	98.0
55-64.....	.4	98.4
65-74.....	.3	98.7
75-84.....	.3	99.0
85-94.....	.2	99.2
95-104.....	.1	99.3
105 et plus.....	.7	100.0

enquête sur l'économie de l'exercice dentaire '54.

Le questionnaire touchait à l'emploi du temps consacré au cabinet durant une semaine moyenne. La moyenne du nombre d'heures consacrées au bureau par les praticiens généraux en 1953 a été de 41.5 et de 39.2, par les spécialistes. Le tableau XIII indique la distribution de ces heures entre le fauteuil, le laboratoire et d'autres occupations.

La quatrième partie du relevé s'occupera des spécialistes et du personnel auxiliaire; elle paraîtra en avril.

TABEAU XIII
Dentistes travaillant pour eux-mêmes
Moyenne du nombre d'heures de travail, par semaine—
Genre d'occupation

Genre d'occupation	Praticien général	Spécialiste	Tous genres de pratique
Au fauteuil.....	34.2	30.8	33.9
Au laboratoire.....	3.6	4.8	3.7
Autres occupations au bureau.....	3.7	3.6	3.7
Total.....	41.5	39.2	41.3

enquête sur l'économie de l'exercice dentaire '54.

Problèmes d'esthétique en prothèse ⁽¹⁾

par le Dr F. GASSER (Bâle)

Lors de la construction de prothèses dentaires, il convient de remplir certaines conditions. Outre les propriétés favorables au bon fonctionnement et aux relations avec les tissus vivants, il faut encore songer au côté esthétique. Dans les considérations qui vont suivre, c'est surtout l'esthétique de la prothèse, respectivement de la rangée de dents artificielles, qui nous occupera. Il faut examiner jusqu'à quel point, au point de vue esthétique, la rangée de dents naturelles peut servir de modèle pour le montage des dents artificielles.

Comme exemple nous choisirons la prothèse totale.

Règle générale, on peut dire que, seule, la rangée des dents antérieures naturelles peut donner des points d'appui pour les relations esthétiques. Cependant, au point de vue fonctionnel, la rangée de dents artificielles se règle uniquement d'après des points de vue prothético-statistique.

Pour déterminer la largeur des dents antérieures artificielles on se guide d'après la position de la commissure labiale. La face distale de la canine se trouve à la commissure labiale. D'après la distance entre le milieu du visage et la commissure labiale, on peut déterminer la largeur des dents antérieures.

Selon les recherches de *Faes* sur la longueur de la lèvre supérieure et la visibilité des dents antérieures supérieures, on

peut admettre qu'en pratique, on ne se trompe guère en montant les dents antérieures de façon que les incisives centrales dépassent la lèvre supérieure normale non tendue de 2 à 2½ mm. Cette indication moyenne ne saurait toutefois constituer une règle générale, car des lèvres supérieures courtes ou longues peuvent modifier la visibilité. Il est bien entendu que la fonction garde la prépondérance. C'est précisément ici qu'apparaît la nécessité de prendre en considération l'individualité de chaque patient.

Le milieu du visage sert de ligne d'orientation; ce milieu est en relation avec le milieu des dents antérieures. Par milieu du visage on entend une ligne qui part du milieu de la glabelle, suit le dos du nez pour aboutir au sillon naso-labial et au milieu du menton. Bien que, selon les observations de *Faes*, 24% des personnes examinées présentaient des déviations de leur rangée de dents naturelles vers la gauche ou la droite du milieu du visage, on considère, dans la pratique, le milieu du visage comme coïncidant avec le milieu des dents antérieures. Il convient de remarquer que ni le frein de la lèvre supérieure, ni celui de la lèvre inférieure, ni le milieu des dents antérieures inférieures ne sauraient servir de points fixes pour déterminer le milieu du visage.

Au point de vue esthétique, la courbe des bords incisifs des dents antérieures supérieures, par rapport à la ligne bipupillaire, est importante et influente. Il est apparu que les arêtes incisives décri-

(1) Communication faite aux XXVII^{mes} Journées dentaires de Paris—Novembre 1953.

vent une ligne convexe, plus ou moins ascendante, allant des incisives centrales aux canines. La convexité, de la courbe des dents antérieures provient du fait que les incisives centrales ont une position plus basse que les canines. Cette disposition des dents antérieures est la plus fréquente, comme on peut s'en assurer par comparaison avec les patients possédant leurs dents naturelles; elle peut donc être considérée comme normale. Dès lors, c'est elle qu'il faut s'efforcer d'obtenir avec la rangée de dents artificielles, afin de donner à celles-ci l'air aussi naturel que possible. Le montage des dents postérieures s'effectue selon des données purement prothétiques.

A l'école dentaire de Bâle, on subdivise la rangée de dents artificielles en trois sections: 1° la courbe transverse des dents antérieures; 2° une section horizontale, allant de la pointe de la canine aux deux prémolaires; 3° une section ascendante, la courbe dentaire dite sagittale, pour les molaires.

Le dessin de la courbe s'établit d'après le *plan sous naso-tragial*, un plan d'orientation prothétique.

Comme règle générale on peut énoncer: les incisives centrales se montent, à droite et à gauche de la ligne médiane, de telle sorte que leurs bords incisifs dépassent uniformément la lèvre supérieure, non tendue, de 2 à 2½ mm. Les incisives latérales se montent environ 1 mm plus haut et les canines, environ 1 mm plus haut que les incisives latérales. De cet arrangement résulte un *arc, convexe vers le bas, l'arc frontal transverse*. Les *prémolaires*, c.à.d. leurs cuspidés buccales se disposent, avec axe vertical, à la même hauteur que les pointes des canines. Cette section, pointe de la canine — cuspidés buccales des prémolaires, s'établit donc *parallèlement au plan sous naso-tragial*. Les *molaires* montent légèrement, de sorte qu'il se forme, avec la ligne sous naso-tragiale, un angle de 12° au plus.

Dans le cadre de ces lignes de conduite toutes les particularités individuelles possibles, qui découlent de l'examen des patients, se laissent intercaler; quelques

exemples pratiques serviront à le démontrer.

Auparavant toutefois, encore un mot sur le *choix des dents*. Le choix des dents, quant à leur grandeur, leur couleur et leur type, est malaisé chez un édenté. Le choix de la forme, de la couleur et de l'arrangement, conformément à la théorie des tempéraments, a été résolu en 1913 par les recherches de *Williams*. Il a établi que certains types fondamentaux des formes naturelles des dents se répartissent sur toutes les races et que certaines formes de dents ne sont nullement liées à certaines races. De même, qu'il n'existe pas de proportion harmonieuse entre la grandeur de la tête ou du corps et la grandeur des dents antérieures. Sur la base de recherches étendues, *Williams* a recommandé l'emploi de trois formes fondamentales, en harmonie avec la forme du visage. 1° dents carrées; 2° triangulaires et 3° ovoïdes. Des dents *carrées* pour des crânes anguleux, des dents *triangulaires* pour des pommettes larges et une forme du visage se terminant en pointe vers le menton, des dents *ovoïdes* pour visages de forme ovale ou arrondie. Bien que cette classification soit susceptible de donner certaines directives, elle ne saurait cependant remplacer les essais individuels, soigneux et discriminants, des formes de dents et de leurs couleurs sur le patient, en tenant compte des particularités de la physionomie de chacun.

La *couleur des dents artificielles* dépend de l'âge et du sexe du patient. Le teint et la couleur des cheveux servent d'indications externes. Par exemple, des personnes saines et vigoureuses, au teint frais et bronzé, correspondent à des dents de nuances allant du jaunâtre au brun, tandis que, pour des individus châtains et délicats, des dents de couleurs ivoire iront mieux. Chez les personnes aux cheveux très foncés, les dents semblent plutôt claires. Pour le choix de la teinte des dents artificielles, des essais minutieux permettront de trouver la couleur appropriée en tenant compte de la physionomie, du teint, de la couleur des cheveux et de l'aspect général comme aussi de certaines habitudes, comme celle de fumer.

Une imitation plus servile qu'autrefois des dents naturelles dans la fabrication de dents artificielles, en porcelaine ou en résine synthétique, a permis de réaliser des progrès dans l'amélioration esthétique des prothèses. Pourtant le problème ne saurait être considéré comme résolu, surtout si les considérations esthétiques sont placées au premier plan, au détriment des considérations fonctionnelles et biologiques, inséparables des prothèses dentaires. En s'en tenant à l'aspect purement esthétique de la prothèse, on obtient, il est vrai, une bonne imitation de la rangée de dents naturelles. Atteindre ce but, c'est une réalisation purement technique, qui ne constitue qu'un des buts, le plus facile à obtenir, de l'art prothétique dentaire. Et, malheureusement, cette manière de voir purement esthétique entraîne trop facilement des possibilités nocives, en raison d'insuffisances mécaniques ou même matérielles des prothèses. Rappelons, dans cet ordre d'idées, les inflammations de la muqueuse, les atrophies osseuses, les hyperplasies, etc. provoquées par des prothèses.

Les conclusions, qui découlent de nombreuses observations identiques, indiquent que, seule, la combinaison du fonctionnement de l'appareil prothétique et de ses relations avec les tissus vivants avec le point de vue esthétique peut assurer la satisfaction des exigences prothétiques selon les règles de l'art. Ainsi nous pouvons fournir à nos patients des prothèses qui leur donnent toute satisfaction, sans nuire pendant des années aux tissus vivants.

EXEMPLES TIRES DE LA PRATIQUE

A Bâle, nous donnons la préférence aux dents "New-Hue" (de fabrication américaine) et aux dents "Candulor" (de fabrication suisse). Voici 3 plaques de cire sur lesquelles ont été montées les dents. Lors du montage on s'inspire des directives précédemment énoncées. En imprimant à certaines dents de légères rotations, en créant de minimes intervalles dans la rangée de dents, en modelant la gencive artificielle, etc. on peut obtenir une prothèse reproduisant fidèlement la nature.

Si l'on meule légèrement quelques dents antérieures, du côté mésial ou distal, pour simuler des obturations au silicate délavées et si l'on imite des abrasions du bord incisif, on peut encore améliorer l'aspect esthétique. Il ne faut néanmoins pas oublier que toutes ces manipulations ne doivent entraver en rien le fonctionnement.

Le patient, âgé de 58 ans, a déjà eu, en 34 ans, 5 prothèses supérieures complètes qui, ou bien ne tenaient pas, ou bien ne satisfaisaient pas le patient au point de vue esthétique. L'inspection de la bouche décela des bords flottants qui purent être éliminés par une plastique du vestibule. Les prothèses furent ensuite confectionnées d'après des empreintes par mastication, système de *Prof. Spreng*. Les dents antérieures ont été montées selon les directives énoncées. En outre, les dents en porcelaine toutes neuves ont été meulées au bord incisif, de même qu'au collet du côté mésial et distal. En imitant la gencive naturelle par l'emploi de résine tricolore, l'aspect esthétique a encore été amélioré. En dépit de son excellente esthétique, la prothèse fonctionne aujourd'hui de façon irréprochable. Pour le profane, même pour le spécialiste, il est difficile de reconnaître que ce patient porte une prothèse.

Voici le traitement prothético-dentaire d'une patiente, âgée de 55 ans, chez laquelle toutes les dents du maxillaire supérieur durent être avulsées. Chez la patiente, nous pouvons voir une légère protrusion du maxillaire supérieur avec une lèvre supérieure courte et une gencive bien visible. De tels cas présentent toujours des difficultés esthétiques, quant à la confection de la prothèse. Afin de les amoindrir, il fut procédé à une intervention chirurgicale sur le maxillaire supérieur immédiatement après les extractions. Une partie de la paroi alvéolaire labiale fut réséquée et une prothèse immédiate, préalablement confectionnée, aussitôt mise en place. Si l'on avait confectionné la prothèse sur le rebord alvéolaire non corrigé, la lèvre supérieure aurait subi une protrusion encore plus

accentuée: la patiente aurait été défigurée par la prothèse. C'est ce que la correction du rebord alvéolaire permit d'éviter. Il fut ainsi possible de reproduire la forme et la position primitives des dents et de confectionner une prothèse répondant entièrement aux exigences, non seulement esthétiques, mais fonctionnelles. L'aspect esthétique de la prothèse fut encore amélioré par l'emploi de gencive en résine multicolore et l'insertion de deux dents plus sombres (2 / 2 dents dévitalisées) d'une autre garniture de dents artificielles.

Au maxillaire inférieur demeuraient 4 dents restants (les deux canines et les deux premières prémolaires). Elles furent munies de couronnes et les deux dents de chaque côté soudées en un bloc. Les prémolaires portent des couronnes télescopées.

CONCLUSION

Comme introduction il est fait mention des recherches de l'école bâloise sur les alignements de dents naturelles. Les résultats obtenus ont permis d'établir des conclusions pour le montage des rangées de dents artificielles, au point de vue esthétique. Sous

ce rapport, l'alignement des dents naturelles peut fournir des points d'appui. En ce qui concerne le fonctionnement, cependant, c.à.d. pour la mastication efficace avec une prothèse, seuls, des points de vue prothétiques entrent en ligne de compte. Comme ligne d'orientation on se sert du *milieu du visage*, une ligne partant du milieu de la glabella et aboutissant au sillon nasolabial et au milieu du menton. Les arêtes des *incisives centrales supérieures* dépassent la lèvre supérieure, non tendue, d'environ 2 mm. D'une canine à l'autre, l'arcade dentaire décrit un arc, convexe vers le bas: les incisives centrales sont situées le plus bas, les incisives latérales, 1 mm plus haut et les canines, 2 mm plus haut que les incisives centrales.

Le cours de l'arcade dentaire depuis l'*incisive centrale* jusqu'à la *deuxième molaire* est divisé selon le *Professeur Spreng*, en trois sections: en un arc, convexe vers le bas, des dents antérieures, en une section droite des canines et des prémolaires, parallèle au plan sous-naso-tragial et une section, légèrement ascendante, des molaires. Tout ce cours a rapport au plan sous-naso-tragial. Grâce à cet arrangement des dents artificielles et au modelage de la gencive artificielle, comme aussi à l'emploi de résine tricolore, on parvient à obtenir de bons résultats au point de vue esthétique et fonctionnel (contact de beaucoup de points).

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Tome 1 — No 7

Bureau national d'Examen dentaire du Canada—Cédule d'examens—1955

durée de chaque épreuve écrite: 2½ heures

lundi, le 6 juin		
Dentisterie opératoire	ouest de Brandon 9.00 hrs a.m.	est de Brandon 10.00 hrs a.m.
Chirurgie buccale, anesthésie et pathologie	1.30 hrs p.m.	2.30 hrs p.m.
mardi, le 7 juin		
Prothèse	9.00 hrs a.m.	10.00 hrs a.m.
Étiquette professionnelle, jurisprudence, et déontologie	1.30 hrs p.m.	2.30 hrs p.m.
mercredi, le 8 juin		
Dentisterie préventive	9.00 hrs a.m.	10.00 hrs a.m.
Médecine buccale	1.30 hrs p.m.	2.30 hrs p.m.
jeudi, le 9 juin		
Deux demi-heures d'examens oraux	9.00 hrs a.m.	10.00 hrs a.m.
(intermèdes laissés à la discrétion de l'examinateur)		

Les examens oraux porteront sur l'application des sciences de base à la dentisterie clinique.

Les candidats dont la demande aura été acceptée seront avertis personnellement de l'endroit où se tiendra l'examen.

Le Bureau national d'Examen dentaire du Canada remet un certificat à ceux qui ont subi avec succès ses examens; ce certificat peut être présenté à tout organisme qui s'occupe d'octroyer des licences au nom des Collèges de toutes les provinces dans le but d'obtenir une licence pour exercer dans une des dites provinces.

Pour se présenter à l'examen du Bureau national d'Examen dentaire du Canada, on doit faire sa demande sur une formule officielle et l'envoyer au secrétaire du Bureau avant le 15 avril. On peut se procurer des formules au secrétariat des facultés dentaires ou en écrivant au secrétaire. Toute la correspondance relative aux affaires du Bureau doit être adressée au:

Dr H. N. Beach, secrétaire
Bureau national d'Examen dentaire du Canada
150 rue Metcalfe, Ottawa, Canada.

Journal

OF THE CANADIAN DENTAL ASSOCIATION

Cephalometric evaluation of vertical overbite in young adults*

by FRANK POPOVICH, D.D.S., M.Sc.D., Burlington, Ontario

INTRODUCTION

Overbite is one of the most common problems that confront the orthodontist and the general practitioner, and is defined as "the overlapping of the upper anterior teeth over the lowers in a vertical plane" *⁵⁰. The extent of overbite varies with different individuals as to age, and type of malocclusion,^{17, 32, 47}

**Bonwell¹¹ and others state that "normal overbite in the incisor and cuspid region is governed by the depth of the cusps of the molars and the premolars which vary in different individuals."

*Strang²¹ "the borderline between the so called normal and abnormal overbite however remains to be clearly defined".

Anthropologic studies by Keith²¹ have revealed that the upper and lower in-

cisor teeth in the primitive man occluded end to end, and that vertical overbite became a common feature of the Saxons over 1,000 years ago.

Clinical studies have been of exceptional value in determining which clinical conditions are associated with variations in the magnitude of the overbite. Excessive overbite is said to interfere with proper occlusion, and normal mandibular closure pattern.²⁰ An abnormal closure pattern interferes with the normal physiological function of the masticatory apparatus and its associated structures. Overbite has also been incriminated with malfunction of the temporo-mandibular joint,^{3, 20} periodontal disease⁵ and relapse in orthodontic treatment.⁵⁵

Since no study to date has taken into account such local factors as, loss of teeth, length of teeth, degree of elevation of teeth, their mesio-distal movements

*Strang, R. H. W. A Text Book of Orthodontia. Philadelphia, 1950. p. 283.

**Campbell, T. D. The Dentition and the Palate of the Australian Aboriginal. Adelaide, The Hassell Press, 1925. p. 50.

Submitted as a partial fulfilment of the requirements for the degree of Master of Science in Dentistry in the Department of Orthodontics, University of Toronto, 1953.

and angulation of incisors and molars, it is the object of this study to bring to light whether all or any of these factors alter the overbite.

REVIEW OF LITERATURE

Much literature has been written on the subject of vertical overbite with almost as many conflicting opinions and findings. The conflict of opinion and findings may be attributed to the meager data, varying malocclusions, age limits of the samples and the varying techniques used in studying the problem, e.g., clinical observations and the study of plaster models. It would seem that too many workers have relied upon subjective clinical observations rather than making use of some of the objective procedures which are now available for studies of this type, e.g., cephalometric and electromyographic analyses.

On the basis of clinical observations and the study of unorientated plaster casts (which are only a measure of the relative positions of the anterior teeth to the posteriors), some authorities have stated that infraocclusion of posterior teeth^{50, 15, 52, 18, 20, 55, 33, 36}; supraocclusion of anterior teeth^{50, 22, 53, 40, 57, 54, 32}; or a combination of the above two factors,^{52, 54} may result in excessive overbite. Ramus height¹³, loss of teeth²¹, mandibular distal positioning²⁰, cusp height,^{15, 11, 53, 40, 58, 5} 1-1 angle,^{19, 52, 32}; contraction of the upper and lower arch segments,²⁰ length of upper and lower incisors,³² facial muscle balance,^{51, 22, 38} and mesio-distal width of teeth³⁰, have also been mentioned as the etiologic factors of overbite.

Since the use of cephalograms in research, much valuable information has been brought to light on the problem of overbite^{53, 59, 60, 41, 56, 8, 26, 14, 43}.

Total face height was found to be shorter in deep overbite cases when compared to the average population^{58, 59, 8}, while total face height was found to be greater in cases with poor profile^{28, 60}. In the deep overbite cases lower face height was shorter^{58, 59}, and a smaller percentage of

the total face height when compared to an average population⁵⁸.

In one of the most comprehensive articles on overbite to date, Prakash and Margolis⁴¹, showed that the overbite is related to the lack of the upper and lower molar height and supraocclusion of the upper incisor teeth, while the lower incisors remain at a constant level. This work however failed to determine whether these findings were as a result of the tooth length or the degree of tooth elevation.

METHOD

The group studied was made up of 51 male and 51 female University students, between 18 and 25 years of age. These preliminary data are given in TABLE 1.

To be included in this study it was necessary for the individuals to have the required amount of overbite as well as no missing first permanent molars or upper and lower anterior teeth.

Visual clinical examination was carried out to determine molar relationship, teeth present, and amount of overbite in mms. The groups were classified according to the Angle method and the amount of overbite was determined by the overlapping of the upper anterior teeth over the lower anteriors in a vertical plane.

The Higley²⁵ head positioner was used in taking the cephalometric radiograms at a five foot target distance. The cephalograms were taken in three positions, occlusal contact and open position in lateral projection, while another occlusal contact position was taken in posterior anterior direction. With the exception of tracing the head of the condyle, the occlusal contact position was used exclusively in the tracing technique. The P-A cephalogram was used for orientation only. All tracings were corrected to the mid-sagittal plane.

In order to evaluate the errors inherent in the method of investigation, a double determination was carried out on seventeen subjects of the experimental group. Each subject had radiograms taken on two separate occasions.

TABLE I

Distribution of cases according to the type of occlusion, degree of overbite, sex, age and missing teeth

Groups	Degree of Overbite mms.	Females	Males	Observed Age Range	Mean Age	Cases with Missing Teeth
Class I Ideal Occlusion Control	0 - 3	17	17	18 - 24	21.0 *1.7	None
Class I Deep Overbite Malocclusion	Over 4	17	17	19 - 25	21.3 *1.6	3 cases each with one missing bicuspid
Class II Deep Overbite	Over 4	17	17	19 - 25	21.2 *1.5	2 cases each with one missing bicuspid
Totals		51	51	18 - 25	21.2 *1.6	

* Standard Deviation

The error due to the methods employed in this investigation probably arises from three sources. Firstly, the errors arising in the method of radiography, which may cause the projected images to vary from case to case. Secondly, there are errors

caused by variations in marking of the reference points. Some points are located on the film by sharply defined contrasting lines while others are identified by less distinct points. Finally there are the errors of reading a calibrated rule. TABLE 2.

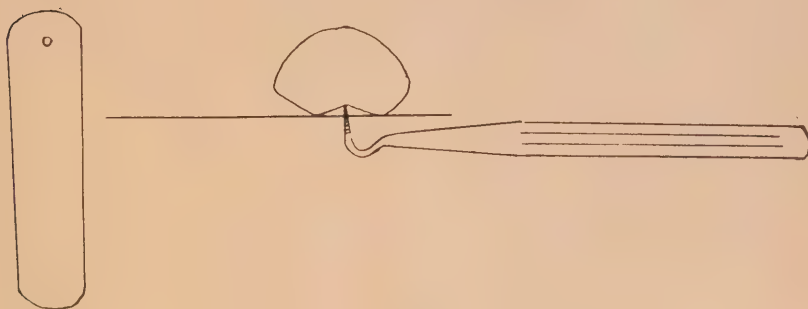


FIG. 1—Method used in measuring cusp height.

TABLE 2— Relative Magnitude of the Measurement Error

Attributes	(a) Pooled average dimension (1st and 2nd determin- ations)	(b) Observed standard deviation (1st and 2nd determin- ations pooled)	(c) One half standard deviation of the individual differences * $\frac{\sum d^2}{2N-1}$	(d) Percent of standard deviation attribut- able to measure- ment error = $\frac{c \times 100}{b}$	(e) Measurement error mean dimension $\times 100$
Overbite.....	4.1	1.7	0.21	12.3	4.8
Mesial 6 to B.....	18.4	3.8	0.56	14.7	3.0
Mesial 6 to A.....	21.4	4.1	0.51	12.4	2.3
ANS-PNS to root tip of 1.....	7.6	3.1	0.56	18.0	7.3
ANS-PNS to root tip of 6.....	5.9	2.4	0.36	15.0	6.1
Effective root length of 1.....	3.9	1.9	0.32	16.8	8.2
Effective crown length of 1.....	12.1	0.8	0.32	40.0	2.6
Effective tooth length of 1.....	24.5	2.4	0.32	13.3	1.3
Effective crown length of 1.....	10.7	1.9	0.46	25.5	4.3
Effective root length of 1.....	11.1	4.0	0.57	14.5	5.1
Effective tooth length of 1.....	21.2	2.6	0.41	15.7	1.4
Tip of 1 root to mandibular plane.....	22.5	3.3	0.58	17.5	2.5
Effective root length of 6.....	13.7	1.8	0.38	21.1	2.7
Effective crown length of 6.....	7.4	0.8	0.34	40.4	4.6
Effective tooth length of 6.....	21.0	1.7	0.31	18.2	1.5
Effective crown length of 6.....	7.9	0.7	0.34	46.5	4.3
Effective root length of 6.....	11.9	2.5	0.45	18.0	3.8
Effective tooth length of 6.....	19.8	2.3	0.48	20.7	2.4
Root tip of 6 to mandibular plane.....	17.8	4.6	0.86	18.7	4.8
ANS—mandibular plane.....	71.8	5.8	0.73	12.5	1.0
ANS-PNS—mand. plane.....	64.6	5.7	0.36	6.3	0.5
N-ANS-upper face height.....	54.8	3.7	0.86	23.2	1.5
Total face height.....	126.9	8.0	0.73	9.1	0.5
Ramus height.....	55.6	6.8	0.58	8.5	1.0
Molar angle (degrees).....	164.8	5.7	1.86	32.6	1.1
Incisor Angle (degrees).....	138.8	11.3	1.10	9.7	0.8

* With reference to Table 2 it can be seen that the preciseness of the measurement must be judged with relation to the variability of the dimension, and to the magnitude of the dimension. Thus far in measuring the effective crown length of upper first permanent molar the estimated measurement error was quite similar (0.34) compared to the error for the tooth length, (0.31); but these take on different relative importance when compared to their respective standard deviations and average dimensions.

MEASURING TECHNIQUE — The tracing measurements were made directly with a millimeter ruler and rounded to the nearest 0.25 mm. The cusp height was measured directly in the mouth by placing an 0.003 metal plate over the occlusal portion of the upper 1st molar and inserting a William's periodontal probe into the central fossa.

The readings were taken at the level of the metal plate to the nearest 0.25 millimeter. Filled teeth were avoided wherever possible, Fig. 1. No significant difference was found to exist between overbite measured on models and radiograms.

LANDMARKS USED

1. Anterior nasal spine — ANS.
2. Posterior nasal spine — PNS.
3. ANS-PNS plane: Since the study involves a localized dental area in a vertical dimension, the ANS-PNS plane was

used as a plane of reference because it was found by Renfroe⁴⁶, and Thompson and Brodie⁵⁶, to vary only to the slightest degree, and is adjacent to the area being studied. All measurements were taken at right angles to this plane and therefore only the effective vertical height of each component was measured.

4. Nasion — N.
5. Root tip of upper incisor — D.
6. Labial cemento-enamel junction of upper incisor — E.
7. Crown tip of upper incisor — G.
8. Crown tip of lower incisor — F.
9. Labial cemento-enamel junction of lower incisor — H.
10. Lower incisor root tip — I.
11. Lower border of mandible — J.
12. Intersection of ANS-PNS plane by K1-K2:— Point K — K-1 — K2 is produced at right angles to ANS-PNS plane and bisects upper first molar crown mesiodistally.
13. Root tip of upper first molar — L.
14. Mesial cemento-enamel junction of upper first molar — O.

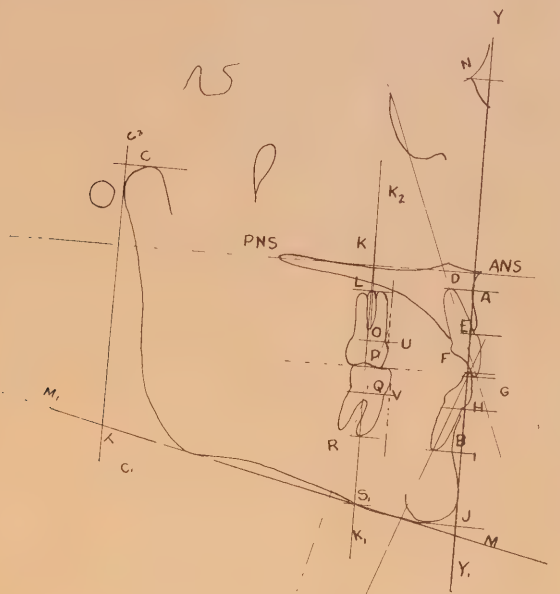


FIGURE 2—Reference Points Employed

15. Mesial occlusal point of upper first molar — P.
16. Mesial occlusal point of lower first molar — P.
17. Mesial cemento-enamel junction of lower first molar — Q.
18. Mesial root tip of lower first molar — R.
19. Point of intersection of (M-M1) and (K1-K2) — point S.
20. The most mesial extension of the upper first molar crown — U.
21. The most mesial extension of the lower first molar crown — V.
22. Point A.
23. Point B.
24. Condylion — C.
25. Intersection of C2-C1 by M-M1—point T.
26. Line C2-C1 is just in contact with the most posterior border of condyle and at right angles to the ANS-PNS plane.
27. Line Y-Y1 is at right angles to the ANS-PNS plane and just in contact with the pogonion antero-posteriorly.

MEASUREMENTS

1. Nasion to ANS — Upper face height.
2. ANS — to point D — The distance from ANS-PNS plane to the root tip of the upper incisor.
3. D to E — Effective root length of the upper incisor.
4. E to G — Effective crown length of the upper incisor.
5. D to G — Effective tooth length of the upper incisor.
6. F to G — Overbite.
7. F to H — Effective crown length of the lower incisor.
8. H to I — Effective root length of the lower incisor.
9. F to I — Effective tooth length of the lower incisor.
10. I to J — Distance from the root tip of the lower incisor to the inferior border of the mandible.
11. K to L — Distance from the ANS-PNS plane to the root tip of the upper first molar.
12. L to O — Effective length of the upper first molar root.
13. O to P — Effective length of the upper first molar crown.
14. L to P — Effective tooth length of the upper first molar.
15. P to Q — Effective length of the lower first molar crown.
16. Q to R — Effective root length of the lower first molar.
17. P to R — Effective tooth length of the lower first molar.
18. R to S — Distance from the inferior border of the mandible to the root tip of the lower first molar. This measurement was also carried out at right angles to the mandibular plane.

19. U to A — Mesio-distal position of the upper first molar in relation to point A.
20. V to B — Mesio-distal position of the lower first molar in relation to point B.
21. ANS to J — Lower anterior face height.
22. K to S — Lower posterior face height.
23. N to J — Total anterior face height.
24. 6-6 angle — Formed by lines bisecting the roots and the crowns along the longitudinal axis of the tooth. Posterior angle read.
25. 1-1 angle — Formed by joining the apices and the incisal points of the upper and lower incisor teeth. Posterior angle read.
26. C to T — Ramus height (effective).

FINDINGS

Class I Ideal Occlusion Group

A strong positive correlation ($r = .73$) was detected between the overbite and the cusp height. The relationship between the overbite and the total anterior face height was also high ($r = .60$) but negative, TABLE 3.

A relationship of some importance probably exists between the overbite and the length of the upper first molar, and overbite and the degree of elevation of the upper first molar, in which cases the correlation coefficient is close to significance. No other factors investigated showed anywhere near significant correlations to overbite, App. 1.

Class I Deep Overbite Group

In this group the overbite showed important positive correlations with the ef-

TABLE 3
Array of findings in Class I Ideal Occlusion Group

	Mean and Stand. Error of Mean	Observed Range of Mean	Correlation to Overbite
Overbite	1.8 ± .06	0 — 3.0	
Cusp. Height	2.0 ± .06	1.5 — 2.3	0.73†
Total Anterior Face Height	125.2 ± 1.52	107 — 142.5	—0.60†
ANS-PNS to root tip of 6	5.7 ± .35	1.3 — 12.0	—0.31
Effective Tooth Length of 6	20.8 ± .20	17.5 — 25.0	—0.28

†1% level of confidence.

fective length of the root ($r = .37$), the crown ($r = .44$), and the tooth ($r = .43$) of the upper incisors, TABLE 4. The above mentioned lengths are to an extent governed by a change in the 1-1 angle, therefore it was important to determine whether a significant correlation exists between the effective length of the upper incisor teeth and the 1-1 angle. Since in this group no correlation exists between the effective length of the upper and lower incisor teeth and the 1-1 angle, the increase in the effective tooth length of these incisors may be assumed to be independent of the 1-1 angle, TABLE 5. No other factors investigated in this group showed anywhere near significant correlations to overbite, App. 1.

Some factors such as cusp height, degree of elevation of the upper first molar, effective length of the lower incisor, and the 1-1 angle, showed significant changes

TABLE 4

Array of findings in Class I Deep Overbite Group

	Mean and Stand. Error of Mean	Observed Range of Mean	Correlation to Overbite
Overbite	5.7	4.5—8.8	
Cusp. Height	‡ 2.2 ± .07	1.5—3.0	.03
Mesial 6 to A	§ 23.4 ± .32	20—27	— .03
ANS-PNS to root tip of 6	‡ 4.5 ± .43	0—10	.11
Effective Root Length of 1	12.9 ± .34	9.5—20	.37*
Effective Crown Length of 1	12.1 ± .19	9.5—14	.44†
Effective Tooth Length of 1	24.6 ± .41	20.5—28.5	.43†
Effective Crown Length of 1	§ 10.6 ± .14	8.5—12	.28
Effective Root Length of 1	§ 11.6 ± .25	9—13	.20
Effective Tooth Length of 1	§ 21.7 ± .32	18—27	.28
1 Angle	§ 143.8 ± 1.94	122—173	.21

‡The dimensions of the mean thus indicated are significantly different from those of the ideal occlusion group.

‡5% level of confidence.

§1% level of confidence.

*5% level of confidence (r).

†1% level of confidence (r).

TABLE 5

Interrelationship of various components of Class I Deep Overbite Group

Group	Primary r	Partial r
Effective Length of 1	$r_{12} = .43†$	$r_{12.3} = .44†$
Overbite	$r_{23} = .21$	
1 Angle	$r_{13} = .00$	$r_{13.2} = .23$
Effective Length of 1	$r_{12} = .28$	$r_{12.3} = .29$
Overbite	$r_{23} = .21$	
1 Angle	$r_{13} = .01$	$r_{13.2} = .22$

†1% level of confidence.

in average dimensions when compared to the ideal occlusion group. These may or may not be directly associated with the mechanism of overbite, TABLE 4.

Class II Deep Overbite Group

This group of malocclusion cases exhibited the highest mean, and the greatest observed range of overbite, App. 1. Negative correlations exist between overbite and the ramus height ($r = .37$), total anterior face height ($r = .33$), lower anterior face height ($r = .52$), degree of elevation of upper first molar ($r = .43$). The 1-1 angle and 6 to A measurement showed rather high positive correlations to overbite, TABLE 6. Significant changes in the average dimensions of the cusp height, lower anterior face height, molar angle, 1-1 angle, 6 to A measurement, and the effective length of the upper incisor, the lower incisor and the lower first molar were noted when compared to the ideal occlusion group, TABLE 6.

Several important interrelations were observed in this group of malocclusions. The ramus height held a strong positive correlation to the lower anterior face height ($r = .47$), and the degree of elevation of the upper first molar ($r = .43$),

TABLE 6

Array of findings in Class II Deep Overbite Group

	Mean and Stand. Error of Mean	Observed Range of Mean	Correlation to Overbite
Overbite	6.6 ± .30	4.5-11	
Cusp. Height	12.2 ± .08	1.5-2.5	.11
Mesial 6 to A	\$ 23.4 ± .45	17-27.7	-.47†
ANS-PNS to Root Tip of 6	5.1 ± .32	1-11	.43†
Effective Root Length of 1	\$ 13.5 ± .24	11-16.7	.26
Effective Tooth Length of 1	\$ 25.2 ± .31	22-29	.08
Effective Root Length of 1	\$ 11.5 ± .28	8.5-14.7	.53†
Effective Tooth Length of 1	\$ 21.3 ± .32	17-24.5	.28
Effective Crown Length of 6	7.2 ± .12	5.5-9	.05
Effective Root Length of 6	‡ 11.5 ± .28	8-14	-.27
Effective Tooth Length of 6	‡ 18.6 ± .32	14.2-23	-.12
Lower Face Height	‡ 68.4 ± 2.17	56.5-80	-.52†
Total Anterior Face Height	123.4 ± 1.23	111-130	-.33*
Ramus Height	59.4 ± 1.45	38-74	-.37*
Molar Angle	‡ 164.4 ± 1.05	155-176	.30
1/1 Angle	‡ 140.3 ± 2.56	120-172	.73†

‡The dimensions of the mean thus indicated are significantly different from those of the ideal occlusion group.

*5% level of confidence (r). ‡5% level of confidence.
†1% level of confidence (r). §1% level of confidence.

TABLE 7

Interrelations of various components in Class II Deep Overbite Group

Group	Primary r	Partial r
I Ramus Height 1.	r ₁₂ = -.3734*	r _{12.3} = -.1707
Overbite 2.	r ₂₃ = -.5165†	r _{13.2} = .3543*
Anterior Lower Face Height 3.	r ₁₃ = .4743†	r _{23.1} = .4154*
II Ramus Height 1.	r ₁₂ = -.3734*	r _{12.3} = -.2304
Overbite 2.	r ₂₃ = -.4326†	r _{13.2} = .3204*
K-L-ANS PNS Plane to Root Tip of 6 3.	r ₁₃ = .4295†	r _{23.1} = -.3249*
III Mesial 6 to Point A 1.	r ₁₂ = .4661†	r _{12.3} = .0176
Overbite 2.	r ₂₃ = .7251†	r _{13.2} = .4791*
1 Angle 3.	r ₁₃ = .6299†	r _{23.1} = .6280†
IV Effective Root Length of 1 1.	r ₁₂ = .5288†	r _{12.3} = .2942
Overbite 2.	r ₂₃ = .7251†	
1 Angle 3.	r ₁₃ = .4857†	r _{23.1} = .6311†
V Effective Tooth Length of 1 1.	r ₁₂ = .2727	r _{12.3} = .0388
Overbite 2.	r ₂₃ = .7251†	
1 Angle 3.	r ₁₃ = .4093*	r _{23.1} = .6989†

†1% Level of confidence.

*5% Level of confidence.

TABLE 7. Also interrelated with a strong positive correlation was the 1-1 angle to the effective length of the lower incisors and the 6 to A measurements ($r = .63$), TABLE 7.

DISCUSSION

Many early investigators, Bonwell¹¹, Case⁴⁹, Dunn²⁵, Neustadt⁴⁰, Campbell¹¹, voiced the opinion that the cusp height was solely responsible for normal overbite. However, these data suggest that there are several other factors correlated to the overbite which may have some

effect on its magnitude. The cusp height varies directly with overbite in ideal occlusion cases. In deep overbite, Class 1 and Class II cases, this direct correlation, if it still exists, is masked by the influences of the other factors. The significant increase in the mean cusp height among the deep overbite groups above those of the ideal occlusion group, may have been brought about by the lack of contacting surfaces during function with consequent absence of wear.

The effective length of the upper incisor teeth in the Class I deep overbite group varies directly with the change in

the overbite. Since a correlation has not been detected between the 1-1 angle and the length of the upper incisor teeth of this group, their length is probably independent of the 1-1 angle. The correlation of the effective length of 1 to overbite in the Class II group was below the 5% level of confidence, although a significant increase of the mean was detected when compared to the ideal occlusion group. This change could be associated with the change in the 1-1 angle.

The effective length of the lower incisors was found to vary independently of the 1-1 angle in Class I (deep overbite) cases, while in the Class II group their effective length was found to vary directly with the change in the 1-1 angle. A common observation in many Class II Div. 1 and 2 cases is that there is labial tipping of the lower incisors which is responsible for the decrease in the effective length of these teeth.

In Class II cases, the ramus height was found to vary indirectly to the overbite and directly to the lower face height, and the degree of elevation to the upper first molar, TABLE 6. Drelich¹⁴, and Mitchell³⁷, found the ramus height to be shorter in Class II Div. 1 cases when compared to a normal sample. *Diamond¹⁵, states that "the primary factor in increasing the vertical development of dental height is the growth in the length of the ramus". This is strongly contradicted by Wylie⁵⁹, as he found no significant difference in the length of the ramus height between cases of slight, medium, and severe overbite (Wylie⁵⁹, did not differentiate his groups other than by degree of overbite). In the Class II group, three factors, ramus height, anterior face height, and distance from ANS-PNS to root tip of the upper first molar, are very closely interrelated as well as related to overbite, thus if one is changed the other two are automatically altered. It could not be determined from this study which one of

these was the important factor in determining the degree of overbite.

The upper first molar in the two deep overbite groups failed to show any change in its average effective length when compared to the ideal occlusion group, and in all three groups failed to correlate significantly to the overbite. However, in the Class II group, the elevation of the upper first molar was indirectly related to the overbite and directly to the ramus height and lower anterior face height. Since in the majority of the cases the upper molars erupt after the lower molars, a stoppage of the growth process in the condyle might prevent the upper molars from reaching their correct level of elevation which the lower molars, and lower and upper anteriors have already attained. All three groups in this study failed to show a significant correlation or average dimensional change in the degree of elevation of the lower molars and the upper and lower incisor teeth. In a cephalometric analysis of bite opening Bahador and Higley², found more cases showed vertical increase in the maxillary posterior teeth than in the same area of the mandibular arch, while Prakash and Margolis⁴¹, found a significant negative correlation between overbite and the upper molar level, but failed to show whether it was due to tooth length, angulation of tooth or its degree of elevation.

The posterior face height in all three groups failed to show a significant correlation to overbite, while the two deep overbite groups did not show any change in average dimensions when compared to the ideal occlusion group. The lack of significant findings in this measurement may be associated with the wide degree of variation in the gonial angle of the mandible.

By the use of partial correlation coefficients, TABLE 7, it was found that when the 1-1 angle was held constant, the correlation between the 6 to A measurement and overbite was insignificant. This could mean that in Class II cases the first upper permanent molars move distally or that

*Diamond, M.: The Ramus as a Factor in the Development of Dental Height. *J. D. Res.*, 22:346, 1943.

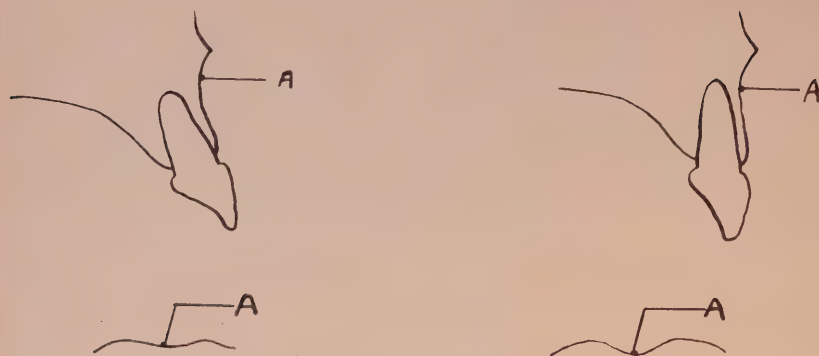


FIG. 3—The effect of labial tipping of roots in Class II cases.

the A point moves labially with the increase of the 1-1 angulation. The first is unlikely, hence one must question the validity of A point in lateral cephalometric radiograms. (It may be that the anatomical point A does not change, but as the upper incisors of a subject have their roots tipped labially, the alveolar process may move along with them without changing the anatomical A point in the mid-line. As the lateral radiograms are taken we have superimposition of the labial plate of the central incisors over point A and we do not see the true A point, Fig. 3.)

The changes obtained in the measurement 6 to A can only be related to the 1-1 angle and not to the overbite.

The 1-1 angle is highly correlated to the changes in the overbite in the Class II group, but this correlation drops considerably in Class I deep overbite group. A highly significant change in the average dimensions of these two groups was observed when compared to the ideal occlusion group. In both of the deep overbite groups the 1-1 angle plays an important role in determining the degree of overbite. Hemley²², Steadman²³, and Grieve¹⁹, Korkhaus²⁰, have hypothesized this earlier.

Mesial tipping of the lower first molar

is responsible for its significant decrease in the effective length as shown by the change in the 6-6 angle in the Class II group. This would substantiate the observation of Prakash and Margolis⁴¹, that the lower first molar appeared in infracclusion when related to the mandibular plane. The distance from the root tip of the lower first molar to the mandibular plane was measured along the vertical axis (perpendicular to the palatal plane) and also at right angles to the mandibular plane. No significant correlation or average dimensional change was observed in any of the three groups studied using either technique.

SUMMARY

A cephalometric evaluation was carried out among 102 young adults between 18 and 25 years of age in terms of twenty-six different factors which might directly or indirectly alter the vertical overbite. In the ideal occlusion cases, the overbite was clearly associated with the cusp height and indirectly with the total face height. Where the overbite was greater, 4-11 mms., the problem was more complex. In the Class I (deep overbite) group, the effective length of the upper incisors was directly related to the overbite while the incisor angle, the degree

of elevation of the upper first molar, and the effective length of the lower incisors were significantly different from the ideal occlusion group and therefore probably affect the overbite mechanism. The Class II sample appeared most complex of the three groups studied. Degree of elevation of the upper first molar, ramus height, lower anterior face height and total anterior face height held strong negative correlations to the overbite, while themselves being strongly interrelated positively. The incisor angle and the effective length of the lower incisors held strong positive correlation to the overbite, the effective length of the lower incisors being strongly dependent upon the incisor angle.

The mean effective length of the upper incisors, lower incisors and the lower first molar, cusp height, lower face height, molar and incisor angle, showed significant change when compared to the mean of the ideal occlusion group, but their effect may be masked out by the other factors.

The effective length of the upper first molar and the posterior face height failed to show any significant changes in Class I and Class II deep overbite group. The degree of elevation of the upper incisor, lower incisor and lower first molar from their base was not co-related to overbite in all three groups studied.

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(Concluded on Page 222)

TABLE 1 (continued)

Groups	Class I Ideal Occlusion		(r) †	Class I Deep Overbite		(r) †	Class II		(r) †
	Mean & Standard Error of Mean			Mean & Standard Error of Mean			Mean & Standard Error of Mean		
Eff. Crown length of 6	7.8 ± .12 6.5 - 9.5		-.13	7.5 ± .14 6.5 - 10		.10	7.2 ± .12 5.5 - 9		.06
Eff. root length of 6	12.9 ± .24 9.9 - 15.5		.03	12.4 ± .24 10 - 16		.12	11.5 ± .28 8 - 14		-.27
Eff. tooth length of 6	20.6 ± .29 16.5 - 24.5		-.03	20 ± .30 17 - 25		.12	18.6 ± .32 14.2 - 23		-.18
Root tip of 6 to mand. pl. (A) (B)	16.8 ± .49 11.5 - 22	A - .05 B - .07		15.8 ± .58 8 - 22.2	A - .01 B - .00		16.9 ± .60 10.5 - 22	A .04 B .04	
Lower Anterior Face Ht.	70.7 ± .96 61 - 82		-.23	68.7 ± 1.04 59 - 83		.11	68.4 ± 2.17 56.5 - 80		-.52 **
Posterior Face Height	63.4 ± 1.12 54.5 - 74.5		-.23	61.7 ± 1.08 52 - 75.5		.09	62.1 ± 1.04 51 - 72		-.27
Upper Face Height	54.6 ± .76 46 - 65.5		-.05	55.5 ± .78 49.5 - 65.5		.16	55 ± 1.73 48 - 63.5		-.24
Total Face Height	125.2 ± 1.52 107 - 142.5		-.60 **	124.1 ± 1.67 104 - 142		.14	123.4 ± 1.23 111 - 137		-.33 *
Ramus Height	59.4 ± 1.21 52 - 81.5		-.01	61.4 ± 1.38 43.5 - 77		.17	59.4 ± 1.45 38 - 74		-.37 *
Molar Angle 6 6	168.4 ± .97 152 - 177		-.03	168.3 ± 1.21 142 - 176		.01	164.4 ± 1.05 155 - 176		.30
Incisor Angle 1 1	125.8 ± 1.23 112 - 142		-.02	143.8 ± 1.94 122 - 173		.21	140.3 ± 2.56 120 - 172		.73 **

(A)—at right angle to ANS-PNS plane

(B)—at right angle to mandibular plane

*—5% level of confidence

**—1% level of confidence

†—Correlation to overbite

APPENDIX TABLE 1

Groups	Class I Ideal Occlusion		(r) †	Class I Deep Overbite		(r) †	Class II		(r) †
	Mean & Standard Error of Mean			Mean & Standard Error of Mean			Mean & Standard Error of Mean		
Overbite	1.8 ± .06 0 - 3.0			5.7 ± .21 4.5 - 8.8			6.6 ± .30 4.5 - 11		
Cusp. Height.....	2.0 ± .06 1.5 - 2.3		.73 **	2.2 ± .07 1.5 - 3.0		-.03	2.2 ± .06 1.5 - 2.5		.11
6 to A	22.1 ± .35 17 - 26		-.02	23.4 ± .32 20 - 27		-.03	23.4 ± .45 17 - 27.5		.47 **
6 to B	20.2 ± .33 17 - 24		.02	19.6 ± .36 14.5 - 22.5		-.03	19.3 ± .50 15 - 26		-.02
ANS-PNS to tip of 1 root	6.3 ± .34 2 - 9		-.08	5.8 ± .42 1 - 13		-.16	5.6 ± .41 1 - 11		-.17
ANS-PNS to tip of 6 root	5.7 ± .35 1.3 - 12		-.31	4.5 ± .43 0 - 10		.11	5.1 ± .32 1 - 11		-.43 **
Eff. root length of 1	12.1 ± .27 9.2 - 16		.02	12.9 ± .34 9.5 - 20		.37 *	13.5 ± .24 11 - 16.5		.26
Eff. crown length of 1	11.9 ± .14 10.5 - 14		.01	12.1 ± .19 9.5 - 14		.44 **	11.8 ± .17 10 - 13.5		-.23
Eff. tooth length of 1	24.0 ± .34 20.6 - 29		.02	24.6 ± .41 20.5 - 28.3		.43 **	25.3 ± .31 22 - 29		.08
Eff. crown length of 1	9.7 ± .11 8.2 - 11		-.06	10.6 ± .14 8.5 - 12		.28	9.8 ± .13 8.5 - 11		.01
Eff. root length of 1	10.5 ± .21 8.5 - 13.5		-.07	11.6 ± .25 9 - 13		.20	11.5 ± .28 8.5 - 14.5		.53 **
Eff. tooth length of 1	20.1 ± .30 17.4 - 23.5		-.07	21.7 ± .32 18 - 27		.28	21.3 ± .32 17 - 24.5		.27
Tip of 1 root to mand. pl.	21.8 ± .46 17.5 - 28		-.03	21.3 ± .46 15 - 27		.05	22 ± .52 17 - 28		-.18
Eff. root length of 6	13.3 ± .23 11.3 - 16.5		-.27	13.8 ± .24 11 - 15		.04	13.4 ± .26 10.5 - 17		-.10
Eff. crown length of 6	7.0 ± .12 6 - 9		-.13	6.9 ± .07 5.5 - 7.5		-.01	6.8 ± .10 5.5 - 8		-.02
Eff. tooth length of 6	20.8 ± .20 17.5 - 25		-.28	20.7 ± .26 18 - 24.5		-.08	20.1 ± .31 16 - 23		-.08

Measurements in mms.

† Correlation to overbite

*5% level of confidence

**1% level of confidence

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Crown and bridge prosthesis

by W. D. CAVANAGH D.D.S., Toronto

The problem of replacing the upper first bicuspid with a fixed bridge is one that frequently presents itself to the dentist. A complete clinical examination should be made, full mouth x-rays, and study models secured. All operative work should be completed beforehand.

The dentist should keep in mind the following purposes of a fixed bridge:

- a) To restore occlusion.
- b) To prevent a breakdown of the periodontal health of the remaining teeth.
- c) To prevent caries of the abutment teeth, and to provide adequate retention.
- d) To restore esthetics.
- e) To assist in chewing of food.

A TYPICAL CASE HISTORY IS THE FOLLOWING:—

The patient is a young woman of 28 years of age. There are numerous satisfactory amalgam restorations in the posterior teeth. There are no restorations, nor is caries present in the anterior teeth. The upper left first bicuspid is the only tooth missing in the maxilla. The

upper left second bicuspid has been restored with an MO amalgam restoration. To the patient esthetics is of prime importance.

Each operator has seen fixed bridges attempting to solve this problem by placing an MO inlay in the upper left second bicuspid, and soldering a backing to the inlay, using a cuspid porcelain facing cemented to the backing. This type of replacement is extremely simple, yet violates purposes a) b) c) & e) which have been stated earlier. Therefore this is an unsatisfactory type of fixed bridge.

Another type frequently seen is to employ a partial veneer or $\frac{3}{4}$ cast crown on the upper left second bicuspid and solder to it either a backing with cuspid facing or a backing with a bicuspid truspontic cemented to it. There again purposes b) and c) have been neglected.

There are three types of fixed bridge restoration which can be used which are of a satisfactory nature.

1. A partial veneer or $\frac{3}{4}$ cast crown attachment on the upper left second bicuspid. A disto-lingual inlay in the upper left cuspid. This can be designed so as to be attached rigidly to the pontic,

making the bridge a true fixed bridge, or this inlay may have a recessed groove in it. The metal portion of the pontic is cast with a tongue fitting precisely into this dovetailed recessed groove in the cuspid inlay. The pontic itself should have a cast occlusal surface which is approximately $\frac{3}{4}$ of the occlusal width of the tooth it is replacing.

2. A partial veneer or $\frac{3}{4}$ cast crown attachment on the upper left second bicuspid. A partial veneer or $\frac{3}{4}$ cast crown on the cuspid. This attachment for the cuspid may be of a design which consists of a groove on the mesial and distal surfaces of the cuspid with a pin cast to fit a pin hole preparation in the cingulum of the cuspid. The operator may prefer to use three pins instead of the two grooves and a pin in the cingulum. The pontic is soldered rigidly to the two attachments.

3. The third type is the one shown in the accompanying illustrations, and is the one preferred by the writer. It adequately fulfills all the purposes mentioned beforehand, and at the same time presents the finest in esthetics.

As with the previous two acceptable fixed bridges a partial veneer crown is employed on the upper left second bicuspid. On the cuspid the attachment is made of the following design. The mesial marginal ridge on the cuspid is left intact. It has been stated that the anterior teeth have been immune to decay. By eliminating any extension of gold on to the mesial surface of the cuspid the esthetics is unmarred. A slice is made on the distal of the cuspid, parallel to the distal surface of the cuspid. This does not produce a display of gold at the distolabial of the tooth. Two pin holes are placed.

- a) One in the cingulum
- b) One in the mesio-lingual portion of the preparation just distal to the mesial marginal ridge.

A groove is placed in the distal surface of the cuspid parallel to the pin holes.

A more detailed description is given further on in this article.

The pontic may be made of porcelain trupuontic and backing, or it may be made with a cast gold occlusal surface combined with acrylic for esthetics. It is soldered rigidly to the two attachments.

As most operators are thoroughly conversant with the preparation of the conventional $\frac{3}{4}$ gold crown for the bicuspid it will be dealt with but briefly. It has been stated that there is an MO amalgam restoration in this tooth. This should be removed. Moderate slices are made mesially and distally, converging towards the lingual, so as to preserve the buccal portion of the tooth for the maximum esthetics. These slices are best made with the very thin stainless steel discs. The occlusal surface is reduced with an inverted cone diamond, used in the contra angle. The occlusal surface is not flattened. Rather we retain the cusp form as much as possible by reducing the inclined planes—see illustration No. 1. These planes should be reduced approximately 2 mms. The bell shape of the lingual cusp is reduced either with the inverted cone diamond, or with a 704 diamond. All gingival margins are carried to the gingival crevice. The mesial and distal boxes are made with a 701 carbide bur, and finished to perfection with the Ferrier chisel and gingival marginal trimmers. The counter bevel is placed on the buccal cusp with a stone and should be carried buccally just sufficient so that the final metal casting will assume the burden of contact of the opposing teeth in all phases of occlusal contact. A wet or dry sandpaper disc is then employed to connect the mesial and distal slices with the prepared lingual surface of the lingual cusp of the bicuspid. All cutting is used with a water spray, or with a slow stream of water directed from the water syringe. Carbide burs, and diamond points should be used with the engine travelling at as high a speed as possible, and with a very light pressure. The water prevents overheating and consequent dehydrating of the cut tooth.

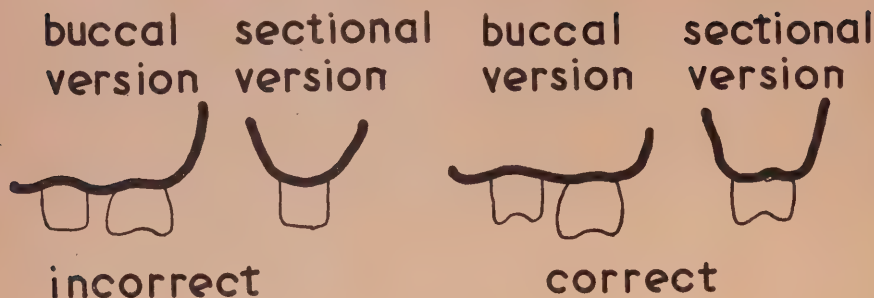
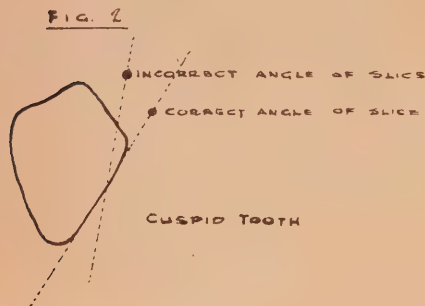


FIGURE 1

As the cuspid tooth is narrower buccolingually than the bicuspid, and as we are employing pin preparations which must be placed in the most advantageous positions, it is wise to prepare it first. However in discing the distal surface for the slice on this tooth we can make our two slices on the bicuspid at this time, with the same instrument if desired. This slice on the cuspid is made as we have stated previously parallel to the distal-lingual surface of the cuspid. See illustration No. 2. The next step is to use a knife edge stone or diamond point cutting from the incisal to the gingival just distal to the mesial marginal ridge. Leave the mesial marginal ridge intact. The remaining portion of the lingual surface of the cuspid is reduced with stones or diamond points to a depth of approximately 1½ mms. If there is a well defined cingulum maintain its outline as it

assists in retention. The first pin preparation is placed as close to the mesial marginal ridge as possible and is started about 2-3 mms. gingivally from the mesio-incisal angle. We are guided here by our radiographs, and use pin holes only when there is no danger of injuring the pulp. The two pin holes, i.e. the mesial and the cingulum pin holes are made parallel to the long axis of the tooth. Pin holes for bridge retention are of little value unless made a minimum of 2½-3 mms. deep. In most cases the mesial pin hole is made to a depth of 3 mms. The cingulum pin hole is placed in a central position in the cingulum, and labially to the prepared lingual surface of the cingulum about 1-1½ mms. It is not carried deeper than 3 mms. as there is usually a slight flare to the pulp in this position. These pin holes are made with a 700 carbide bur. The groove on the distal of the cuspid is made with a 701 carbide bur as close to the labial edge of the distal slice as possible, and carried gingivally almost to the gingival crevice. The distal slice and the prepared portion of the lingual surface are joined and finished with wet or dry sandpaper discs. A counter bevel is placed on the prepared incisal planes of the cuspid tooth, with the sandpaper discs. See illustration No. 3.



The writer's choice of impression material is the reversible hydrocolloid. The securing of a satisfactory impression

FIG. 3

may be proceeded with at this time, or at the next appointment.

To obtain a successful hydrocolloid impression the following details must be carefully followed.

1. All prepared margins of the abutment teeth must be completely exposed, with the gingival tissues well retracted.

2. The hydrocolloid must be at the correct consistency.

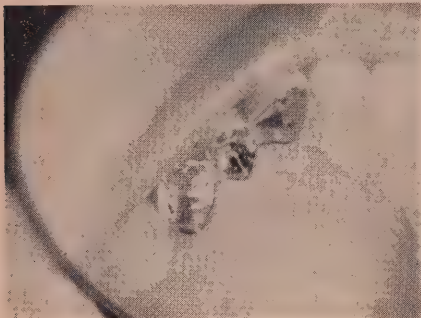
3. The hydrocolloid must be properly and thoroughly chilled before removing the impression from the mouth.

1. There are numerous methods of securing adequate gingival retraction. If the operator desires to take the impression at the next appointment the following technique is strongly recommended. Select aluminum crown forms which fit the prepared abutment teeth. These crown forms should be trimmed so that the gingival margins extend about one mm. beyond the prepared gingival borders of the abutment teeth. A sandpaper disc is used to smooth these margins of the crown form. A.D.A formula No. 2 is mixed to a smooth creamy consistency and the crown forms are filled with it. The open end of the crown form is then covered with a very thin layer of teased out cotton fibres which are allowed to extend about $\frac{1}{8}$ " beyond the periphery of the crown form. The abutment teeth are dried, sterilized and redried. The filled crown forms are placed

on these teeth and the patient is instructed to close in centric occlusion, and to assume the balancing and working bites. A wet pledget of cotton is used to adapt the free ends of the cotton fibres about the neck of the tooth and a thin cement instrument is employed to pack the cement and fibres down into the gingival crevice. This cement has a strong sedative action, and the crown forms prevent extrusion of the prepared teeth. The labial portion of the cuspid crown form is cut out to give reasonable esthetics. The operator will likely desire to use a celluloid or resin crown form for anterior teeth instead of the aluminum crown form. These forms are readily removed by the dentist at the next appointment, and the cement itself comes away freely leaving the tooth clean and the retracted gingival tissues healthy and free from any tendency to bleed.

Should the operator desire to secure a proper hydrocolloid impression at the same sitting at which the preparations have been made, satisfactory gingival retraction may be obtained as follows. A piece of crocheting cotton, about six inches in length is tied tightly about the neck of the prepared tooth. The tooth should be dried and isolated with cotton rolls before applying the cotton string. This cotton is then worked down into the gingival crevice beyond the prepared margins, with a thin flat blade of a cement instrument. When all abutment teeth are treated in this manner the cotton string is soaked in adrenal chloride solution 1:100 strength. This string is left in position for approximately 5 mins. Some operators like to take their hydrocolloid impression with this string in place about the teeth. Others like to remove the string before taking the impression. Either way the teeth should be thoroughly washed, to rid them of any adrenalin chloride solution, and then redried before proceeding with the actual impression technique.

2. Our next step is to obtain the correct working consistency of the hydrocolloid.



COMPLETED BRIDGE

The dentist receives it as a solid stick. After boiling this material for 8-10 mins. it becomes viscous. This temperature is of course too hot for the flesh to tolerate, and it is much too molten to confine in a dental tray. It is tempered or conditioned to approximately 150° F. At this temperature it can be handled comfortably and placed in the tray. This tray, containing the hydrocolloid is placed in a water bath at approximately 110° F. for 10. mins. The details of the cavity preparations, such as pin holes, grooves etc. are filled with hydrocolloid expelled from a small syringe. The syringe and the hydrocolloid in it should be tempered at approximately 150° F. To apply the hydrocolloid, dry the abutment teeth with a gentle stream of warm air. Expel a small amount of the hydrocolloid from the syringe and then starting at the gingival portion of the preparation work occlusally building up the hydrocolloid until the abutment teeth are completely covered with the impression material. While the operator is doing this, the nurse removes the dental tray laden with

the hydrocolloid tempered at 110° F. from the tempering bath and slices about 1 mm. of the surface mass from the hydrocolloid. This will permit a perfect union with that which has already been injected into the mouth with a vibrating motion. Running cold water is passed through the tray for 5 minutes. This reverses the hydrocolloid and causes it to become a solid mass once more.

The complete opposing impression may be taken with hydrocolloid, or, for speed and economy, alginate or plaster of Paris or any other suitable material may be used. These casts are trimmed and mounted on an anatomical articulator.

The attachments are waxed up and cast. The gold framework of the pontic is cast separately and is soldered to the two attachments. Do not attempt to cast the attachments and pontics as a single unit as linear shrinkage of the fixed bridge occurs on setting, preventing a perfect seating of the fixed bridge. The bridge may be finished to high lustre ready for insertion at the next appointment. See illustration No. 5.

2 Bloor St. E., Toronto

Human gingival epithelium was found to be similar to human epidermal epithelium in showing a distinct sex difference. This difference consisted in the presence, in three-fourths of the nuclei of female specimens, of a large Feulgen-positive particle, usually adjacent to the nuclear membrane. Nuclei of male specimens showed a similar smaller particle in from one to two per cent of the cells.

A. S. Marwah, B.D.S. and J. P. Weinmann, M.D.,
The Journal of Periodontology.

Periodontal patient management for the general practitioner*

by MAX SHAPIRO, D.D.S.

Chief Periodontology Dept., Cedars of Lebanon Hosp., Los Angeles, Calif.

The general practitioner, in handling the periodontal patient, may have certain problems. These problems increase as general practitioners realize how much can be done for the periodontal patient in light of some of the more recent work¹⁻⁷. The number of diagnostic procedures obtained in evaluating systemic conditions, the manual dexterity of the operator, the follow up therapy and restorative aspects of periodontal treatment are all to be considered.

Dental patients frequently do not desire to pay for diagnostic procedures. It has been the custom in many dental offices to perform various diagnostic procedures which occupy a great deal of time, without charge. In discussing the periodontal problem, and in making a periodontal diagnosis, occasionally, hours may be spent. The patient frequently is accustomed to paying for items or materials, rather than for services. All these factors in patient psychology pose a problem.

Treatment of the periodontal patient consists essentially of the removal of the various etiologic factors, and the restoration of the mouth to a full complement of teeth, so that each tooth bears the least amount of stress in use.

The removal of calculus and thorough polishing of the tooth surface is an essential part, and is not to be minimized in treatment. If only this is done, and pockets or deep crevices are allowed to remain, the periodontal disease is not cured, and the disease will usually be progressive. In order to treat a patient completely and adequately and to cure the disease, one must evaluate the systemic as well as the local etiologic fac-

tors. Finally, when the local periodontal procedures have been performed, or occasionally prior to these procedures, extensive restorative work may be necessary. All these factors make it difficult to obtain the patient's consent. He may be apprehensive about cost, pain or prognosis. A positive honest attitude based on adequate knowledge will create a favourable dentist-patient relationship.

The patient will value the services received in proportion to the amount paid. The charges for periodontal services should be fair and consistent with other charges made in dentistry for a corresponding time. Only then will the practitioner spend the time necessary to treat the patient completely and carry him through the phases of therapy to a successful conclusion. Presented here is an approach which will enable the patient to understand the total periodontal problem and become a cooperative, enthusiastic patient, anxious to proceed with complete and adequate treatment.

At the first sitting, the patient is examined, and if periodontal disease is found, the patient is told. The statement should be forthright and blunt. Frequently, patients are told that there is "something wrong with their gums" or that "there is some gum trouble that will be watched". Periodontal disease is present when any areas of the mouth are affected with the various signs and symptoms of chronic destructive periodontal disease, or gingivitis, as has been described^{4,8}.

The patient with early periodontal disease should have as intensive a therapeutic regime as one with advanced destruction. It may be more important to treat the early case than the advanced one.

The patient should be made familiar with some of the aspects of periodontal

*Delivered to the Winnipeg Dental Society.

treatment; the reasons for its elimination, the time element involved, the possible etiologic factors, and finally the necessity for complete and adequate diagnostic procedures. It may be necessary to secure cooperation with the patient's physician, and this is sometimes difficult to obtain. If the patient understands the need for medical cooperation, he will insist that it be given, thereby aiding the dental problem.

At the first sitting, to conserve time, the patient is given a written note, as follows:

"TO MY PATIENT

You have a need for gum treatments of one type or another, or for a diagnosis. In order to save time and familiarize you with what we intend to do, I would like you to know the following: Pyorrhea or Periodontal disease is one which affects the bone supporting the teeth. The bone around the teeth is missing in such a case. The gums, on the other hand, may be at their normal high level and detached from the teeth leaving a space between the gum and the tooth. This space between the gum and the tooth is known as a pocket. It is this pocket which becomes infected, creating a focus of infection which may affect all parts of your body, such as your eyes, heart, joints, kidneys, etc., injuring your health. This is one of the reasons the pockets must be eliminated.

The first few visits will be spent in making a diagnosis. At this time the factors which cause or contribute to your disease are determined. Without knowing these factors, the disease cannot be completely and adequately treated. Once these factors are known, the treatment becomes much easier and more positive.

After the diagnosis a fee is established for the whole case. There is also an additional charge for the diagnosis and consultation, which is included in this fee. This fee includes all the work I do for you, but **does not include** follow-up X-Rays or prophylactic treatments

(cleaning the teeth) which you will need for the rest of your life. There is a separate fee for this when you are called back 3, 4, 5 or 6 months after completion of treatments. If any additional periodontal work is necessary at this time, no additional charge is made, but there is always a charge for prophylaxis and X-Rays. After the diagnosis it is best for the patient to stop and think the matter over thoroughly as to whether or not he wishes to proceed with his Periodontal treatments because of the following facts:

Periodontal disease can come from many causes. It is not a simple disease. The causes are complex. Some of the causes are simple, for example, a tooth which strikes heavily when biting. Another simple cause may be tartar. Other causes are more complex, and more difficult to correct and determine, such as the results from missing teeth, or systemic factors as diabetes, endocrine disturbances, faulty metabolism or diet, and nervous disturbances. However, it is **usually not one factor alone**—they are usually **multiple**. In other words, it might be a tooth striking another tooth heavily, tartar, and diabetes,—all three contributing to the case of Periodontitis. Missing teeth, however, are common contributing factors. This results in the shifting of teeth and abnormal stresses being placed on the remaining teeth with areas of food impaction—that is, food wedging between the teeth. In order for your Periodontal disease to remain cured, the multiple contributing factors must be eliminated—the missing teeth must be replaced, the high spots, tartar, and other factors must be removed, etc.

Consequently, after Periodontal treatments, the missing teeth, faulty fillings, and so forth, must be taken care of. Unless this is done, the Periodontal treatments may not succeed. Success is more often assured when the mouth is completely rehabilitated. This type of restorative work should be carried out in accordance with principles which will prevent future trouble,

Complete and adequate treatment, which means correct diagnosis, elimination of all causative factors, and correct restoration of the teeth will result in a clean and healthy mouth, and one in which the teeth will remain for many, many years, very often for the life of the patient."

This "To My Patient" letter will familiarize the patient with all the questions that they may have, so that there is no future misunderstanding, and so that there will be cooperation throughout the course of treatment.

It is noted that a flat fee is given. In periodontal services, this is a desirable method, inasmuch as some visits may be more time consuming than others, and it is difficult to place a charge on a sitting basis. Placing the charge on a flat fee basis will insure that the patient continues through the phase of proper home care and tooth brush instruction, and into the restorative phase to obtain a permanent cure.

The diagnostic procedures become more important when complicated periodontal therapy is to be instituted and less important if simpler techniques are used.

Prognosis should be based on the conditions found; on the ability to eliminate the various etiologic factors; the ability to restore the missing teeth; the ability to make the teeth firm, or potentially firm; and on the ability to eradicate pockets. These factors in prognosis are too lengthy to discuss here and are a part of another paper in preparation. The fee for periodontal services, and restorative services may well be separated. The total amount, however, should be told the patient, so that periodontal treatment will not fail because the patient cannot afford proper oral reconstruction.

Complete roentgenograms, study models, kodachrome photographs, and charting of all pocket depths should be done. Records should also be made of gingival condition, mobility, vitality, food impaction areas, roentgenographic findings and miscellaneous conditions. Finally, a written prognosis of each tooth should be made based on the facts known.

With the above outlined procedures, it has been found that the management of the periodontal patient becomes a pleasant one, and the final results satisfactory to both patient and the dentist.

SUMMARY:

A method of handling the periodontal patient is given which will result in a cooperative, enthusiastic patient, anxious to proceed with complete and adequate periodontal treatment. Cooperation of the patient, the physician and the dental practitioner will result in eradication of the periodontal disease.

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202 So. Hamilton Drive,
Beverly Hills, California.

Cold cure acrylic resin splints can be used in a variety of situations met in the course of occlusal rehabilitation. They can be used to protect abutments, to provide immediate replacements, to splint periodontally involved teeth, to test the patient's tolerance to a new occlusal level, to hold gingival packs, and to prevent the movement of abutment teeth.

Stanley B. Chestner, D.D.S.,
The Journal of Prosthetic Dentistry, March, 1955

Oral diagnosis*

Short Communication

by D. G. MARSHALL, D.M.D., Vancouver, B.C.

ROUTINE TO FOLLOW TO ESTABLISH A SUCCESSFUL DIAGNOSIS

A. Obtain a history to include:

1. Dental History—last visit, sensitivities or reactions, difficult extractions, fainting, etc.
2. Medical History—general health, circulatory disorders, respiratory diseases, blood dyscrasias, other illnesses, under treatment by physician, his name.
3. General Facts—age, sex, occupation or guardian, chief complaint.

It is suggested that this history be recorded on a card filled in by the patient at the initial appointment.

B. Make a thorough oral examination:

1. Soft Tissues—all sides of the tongue,

buccal and lingual mucosa, floor of the mouth, tonsils, nasopharynx, and lips—tonus, colour, lesions, etc.

2. Gingival Tissues—colour, tonus, exudates, depth of crevice, swellings, mobility of teeth.

3. Teeth—hygiene, caries, existing appliances, occlusion—esthetics, results of any tests.

C. Make a radiographic examination to show:

1. Bone Structure—density, trabeculations, cysts or tumors, foreign bodies, etc.
2. Teeth—caries, roots, pulp chamber, anomalies.
3. Periapical Areas—rarefactions, condensations, etc.
4. Alveolar Crest.

D. Take and mount study models if necessary.

E. Analyze the data collected and make your Diagnosis.

*Oral Diagnosis Study Club.

Presented to Vancouver Dental Society, Feb. 1, 1955.

SEMINAR — IN ¼ TIME

Because of the acknowledged success of the Dental Seminar Programme sponsored and developed in Ontario by the Dental Public Health Committee of The Ontario Dental Association, the Committee has been asked to present a similar type programme at the Convention.

Paedodontics

Dr. Marjorie Jackson—*"What to look for and what to find in the pre-school and mixed dentition age groups."*

Dr. Morley J. Crockford—*"Operative procedures and space maintainers."*

Orthodontics

Dr. W. K. Shultis—*"Mixed Dentition Analysis"*

Dr. J. T. Crouch—*"Appliances in Action."*

Attendance Limit—60

P.D.R. No. 9

TUESDAY, May 17—9:30-11:30 a.m.

ABSTRACTS

The effect of fluorine-free food on dental and periodontal structures as revealed by roentgen studies.

by J. F. McCLENDON and J. GERSHON-COHEN.
American Journal of Roentgenology, June 1954.

Albino rats were fed on a fluorine-free diet in order to study roentgenographically the effects of this diet on the teeth and periodontal structures. The control animals were fed either a fluorine-free diet with 10 ppm fluoride added to the drinking water or were on an identical regimen except that the diets were derived from plants grown in soil instead of in fluorine-free water.

In 16 rats, the fluorine-free diets produced dental caries in 84 per cent of the molar teeth. When 10 ppm of fluoride was added to the drinking water this percentage was reduced to 6. In rats fed with soil-grown foodstuffs which had a natural fluorine content, only 23 per cent of the molar teeth had caries.

Poor periodontal condition was present in the molar region in all animals fed the fluorine-free diet. This condition contrasted with the healthy teeth and calcification in the jaws of the rats that were fed 10 ppm fluoride in the drinking water. The animals fed on soil-culture food also presented a minimum number of carious lesions.

An observation on the attachment of calculus.

by FRANK R. SHROFF, D.D.S. (N.Z.), Dunedin, New Zealand.

Oral Surgery, Oral Medicine, and Oral Pathology.
February 1955.

During the deposition of calculus on the tooth surface, alterations occur in both the cuticle and cementum. These changes, which would appear to be both chemical and physical, gradually weaken these tissues and their attachment to the remainder of the tooth and cause them, in their altered state, to be bound together firmly with the organic matrix of the calculus deposit.

The extent to which these changes take place and the ultimate strength of the resulting attachment of the calculus appear to be dependent on the length of

time during which the calculus has been present at different levels. Thus, in the middle third of the deposit, where the calculus was thickest and presumably had been formed for the longest period of time, the attachment was strongest and resulted in tearing of the cementum. Above and below this region, where the calculus became progressively thinner and had been present for a shorter period of time, the strength of the attachment became progressively weaker.

The role of bacteria in the formation of calculus has been investigated by many workers. The results of these researches lead us to believe that filamentous organisms may be concerned in the mechanism of precipitation of mineral salts from saliva and also in the attachment of this precipitate to the underlying tooth tissue. However, it is not known

how these bacteria attach the deposit so firmly and it is unlikely that bacteria themselves could adhere to cementum with a force sufficiently strong to result in the tearing of this tissue as described here. Moreover, although the histologic appearance of the calculus did not differ in other respects from that described by other workers, it was observed that in the regions of strong attachment the organic matrix of the calculus was strongly eosinophilic, while in areas of weaker attachment it was more basophilic. This suggests that, at the points of strong attachment, the bacteria were not in a viable state and the chemical nature of the matrix was different.

It would seem likely that metabolic activity of the bacteria alters first the cuticle and then the cementum. These altered tissues then become blended with dead bacteria and protein material deposited from the saliva on the surface, resulting in a union which is extremely strong. It is also evident that the change which takes place in cementum penetrates deeply into that tissue and it is possible that it may eventually involve the dentine also.

Some support for this belief is given by the appearance of the condition as

shown in a ground section. In this instance a defect in the cementum and dentine at the cemento-enamel junction has become filled with calculus. The original nature of the defect is not known; there is no evidence of caries. Beneath the calculus deposited in this defect the structure of the dentine is altered considerably, leaving more highly calcified portions of the dentine standing out in relief. This would tend to indicate a change in the organic matrix such as has been postulated as occurring in cementum.

The results of observations on material from one particular person cannot be regarded as indicating that this type of attachment occurs in every case. It is significant, however, that the changes mentioned occurred consistently and at approximately the same levels on all the teeth examined. This may be logically interpreted as showing that this is at least one of the possible mechanisms involved in the attachment of calculus. It also lends some support to the observation of Riffle and others that calculus-bearing cementum differs physically in consistency from normal cementum. This aspect is an important one requiring further investigation.

Occlusion in Prosthodontics.

by CARL O. BOUCHER, D.D.S., F.A.C.D., Columbus, Ohio.

North-West Dentistry, January 1955.

There are four components of occlusion. The temporomandibular joint, the musculature, the tissue support for denture bases, and the teeth. Only the last of these is completely in the control of the prosthodontist.

The temporomandibular joint is capable of varied and complex movements. Some of the movements are controlled by guiding influences of the joint and the occlusal surfaces of the teeth while they are in contact. Other movements are

the free movements that are controlled by the neuro-muscular system, and the guiding influences of the temporomandibular joint. These are the movements that occur in the mastication of food and in speech.

The musculature supplies the power for occlusion in the direction of the contracting fibers which varies with the position of the mandible when the contraction occurs.

The soft tissues in the basal seat of dentures contribute to changes in the relative positions of the bones (of the maxilla and mandible) to each other when varying pressures are applied.

The occluding surfaces of teeth serve as guiding influences on jaw movement

when they are in contact, and determine to a large extent the cycle of jaw movement used in the mastication of food. The arrangement of the contacting surfaces of teeth to each other in varying jaw positions influences the relation or stability of the dentures to the basal seat, and an understanding of the static concept of occlusion is necessary for the proper arrangement of teeth.

An understanding of the dynamic concept of occlusion is necessary for the development of an efficient masticatory apparatus. The static concept of occlusion applies when there is no food interposed between the teeth, while the dynamic concept of occlusion applies when the mastication of food is being accomplished.

Review of the Bartlett-Cameron survey: a ten year fluoride study.

by NICHOLAS C. LEONE, M.D., FRANCIS A. ARNOLD, Jr., D.D.S., EUGENE R. ZIMMERMANN, D.D.S., PATRICIA B. GEISER, M.S., and JACOB E. LIEBERMAN, M.S.

Journal of the American Dental Association.
March 1955.

The Bartlett-Cameron study combined the methods of clinical, laboratory, and epidemiological research to further knowledge regarding fluorides. It was begun in 1943 by H. Trendley Dean and Francis A. Arnold, Jr., of the Public Health Service, in the towns of Bartlett and Cameron, Texas. Ten years later the same procedures, with a few additions, were repeated by another Public Health Service team. The purpose was to study a population group which had ingested water containing excessive amounts of naturally occurring fluoride over a long period.

Bartlett was selected because the natural fluoride level of the local water supply was one of the highest in the nation — 8 ppm fluoride (F) — which is eight times the amount recommended for dental caries prevention. A town with a water supply naturally containing excessive fluoride was selected on the assumption that any association between exposure and physiology might be manifest at a high concentration, particularly after prolonged ingestion. Cameron, compar-

able in size, location, and other characteristics, was the control town. Its water supply contained 0.4 ppm of fluoride (F).

As was expected, dental fluorosis was significantly greater in Bartlett than in Cameron (all of the participants born and in continuous residence in Bartlett during the tooth formative period exhibited positive evidence of dental fluorosis).

The incidence of cardiovascular disease was higher in Cameron, an observation unrelated to fluoride ingestion.

There were no significant differences between the age-adjusted death rates in the two towns.

The two groups showed no significant differences in the ten-year period with respect to changes in blood pressure, arthritic conditions, eyes, thyroid disorders, hearing, tumors, cysts, bones and bone fractures, and the urinary system.

The only difference in laboratory findings was in the white blood cell count, which tended to be higher in Bartlett in 1953. White blood cell counts are normally subject to considerable variation and, when viewed in the light of clinical experience, this finding does not suggest an association with fluoride intake.

When the data are reviewed critically, it is clear that the medical characteristics of the two groups, with the exception of dental fluorosis, do not differ more than would be expected of two comparable towns with or without an excess of fluoride in the water supply.

A preliminary report of photoelastic tests of strain patterns within jacket crowns

by CHARLES B. WALTON, D.D.S., and MILTON M. LEVEN, M.S., Pittsburgh.

Journal of the American Dental Association, January 1955.

It is a well-known fact that jacket crowns sometimes fracture from apparently normal use. The types of fractures—the longitudinal split of the crown and the crescent-shaped fracture in the labio-gingival or linguo-gingival regions—are familiar to all dentists. The purpose of the present study was to determine the causes of such fractures by analyzing the regions of strain within jacket crowns subjected to a load.

Following photoelastic tests the following conclusions could be drawn:

The thicker the walls of the jacket, the greater is its strength. Stability, retention, danger to the pulp and weakening of the dentine core were disregarded in

this test, but must be considered in practice.

Greater strength of the jacket is obtained by providing a generous bevel of the linguoproximal line angles on the preparation and by preventing thus sharp angles within the crown. Such angles can develop great tensile strains in upper anterior jackets.

For porcelain to have strength, it must be thick in the lingual articulating region.

The labial shoulder should be square or preferably acute to support the compressive stress.

The proximal shoulder should be as flat labiolingually as possible to reduce the strains at the height of the gingival festoon.

The lingual shoulder has little relation with this type of load on upper anterior teeth.

Maximum mesiodistal width of the preparation is important. The strains developed at the incisal end of the preparation with the eccentric core were about twice as great as those of the preparation with a symmetrical core.

An inorganic qualitative and quantitative analysis of green stain.

by D. E. SHAY, Ph.D.; J. H. HADDOX, D.D.S., and J. L. RICHMOND, D.D.S., Baltimore.

Journal of the American Dental Association, February 1955.

The approach used in this investigation on green stain parallels one phase of Vallotton's work on brown stain; that is, the inorganic quantitative and qualitative analyses of brown stain. The clinical observation of the chromatic difference of the brown and green stain is chemically demonstrated by comparing the results of the analyses.

The elements common to both stains were calcium, iron, silicon, magnesium, lead, manganese, phosphorus, silver and sodium. Those elements found in green stain and not in brown stain were aluminum, barium, nickel, boron, copper,

titanium, strontium, and potassium. Tin and chlorine were found in brown stain but not in green stain.

The elements copper and iron can be regarded as blood tracers; thus, support is given to Miller's theory. The hypothesis arrived at by Miller indicates that the stain is composed of a bluish-green sulfomethemoglobin. The reaction of hydrogen sulfide and blood can be carried out readily in vitro to produce this pigment. It is possible that in the mouth a similar reaction involving bacterially produced hydrogen sulfide gas and blood from gingival haemorrhage could result in the formation of the pigment found in green stain.

The subjects from whom the stain was procured for this study presented varying degrees of gingival inflammation, which ranged from slightly inflamed gingivae to frank gingival hypertrophy. Every mouth which was examined ex-

hibited poor oral hygiene; *materia alba* was present on all the teeth, and blood was readily expressed from the gingival tissues.

From the authors' observations, the formation of green stain was always

associated with lax oral hygiene and gingival inflammation. Therefore, it is possible that the true etiology of this condition probably lies in the relationship of the bacteria-laden debris to the gingival haemorrhage.

Partial denture design in relation to occlusal trauma and periodontal breakdown.

by W. KROGH-POULSEN, L.D.S., Dr.Mid.Dent.
International Dental Journal. December 1954.

Partial denture design is only one part of the treatment-planning for partially edentulous individuals, and is not always the most important. The treatment prior to insertion of partial dentures, which may include elimination of dental foci, treatment of the mucosa and the periodontal tissues, treatment of caries and its sequelae, and occlusal equilibration, is most essential.

Fixed prosthetic appliances, when possible, are preferable to removable dentures.

The essential point in partial denture design is to control undesirable movements of the denture and the natural teeth by means of occlusal equilibration and stabilization of the denture. In addition

a hygienic and an aesthetic construction is necessary for the physical and mental comfort of the patient.

In order to obtain hygienic conditions the denture base should where possible be kept away from the marginal gingiva, and dental support should be secured, so that the denture cannot sink. It is essential to teach mouth hygiene to the patients.

In order to prevent periodontal breakdown, the design should include splinting of weak, natural teeth and as a whole secure a balanced distribution of the horizontal components of force. Short, straight saddles should be supported at both ends. Free-end saddles, in order to minimize results of lever-action, should cover a large area of gingiva and the main occlusal load should be placed upon the middle part of the saddle or near the occlusal rest. In cases with a positive "biologic factor", rigid constructions serve well, provided they are stable. In cases with a negative "biologic factor", some sort of stress-breakers may be used.

The free-way space and its relation to the temporomandibular articulation.

by STANLEY G. STANDARD, D.D.S., and JAMES B. LEPLEY, D.D.S.

The Journal of Prosthetic Dentistry. January 1955.

Physiologic rest and centric relation are points of reference that can be used to obtain an accurate and definite occlusal vertical dimension.

The first movement from physiologic rest to occlusal contact is an upward vertical displacement.

The distance between physiologic rest

position and the end of this vertical movement is the maximum amount of free-way space to be incorporated in any oral prosthesis.

Further closure results in a rotating of the condyle around its axis, with further backward and upward movement creating an unfavourable position of the condyle for withstanding crushing forces.

Continued forces applied with the condyles in such unbalanced positions may result in bone changes at the neck of the condyle, or at the angle of the mandible, and may create a prognathic occlusion and other temporomandibular disturbances.

Oral aspects of excessive fluorides in a water supply.

by EUGENE R. ZIMMERMANN, D.D.S., NICHOLAS C. LEONE, M.D., and FRANCIS A. ARNOLD, Jr., D.D.S.

Journal of the American Dental Association.
March 1955.

A ten-year (1943-1953) study of two groups of people residing in Bartlett (8.0 ppm fluoride (F)) and Cameron (0.4 ppm fluoride (F)), Texas, was conducted to determine if the prolonged use of excessive fluorides in a water supply was associated with physiological changes in body tissues. The oral aspects of this study have been presented in this report.

One hundred and fifty-six participants, 76 in Bartlett and 80 in Cameron, were examined in 1943 and in 1953 for dental caries experience, gingivitis, dental fluorosis, and other types of oral pathology.

As was expected, dental fluorosis was significantly higher in Bartlett than in Cameron. The amount of gingivitis, alveolar bone resorption, dental caries experience, calculus, and the prevalence of leukoplakia, lichen planus, soft tissue colour abnormality, pulp stones, horizontal and vertical alveolar bone resorption, periapical rarefaction, condensing osteitis, and dentigerous cysts were examined statistically and no significant difference was found between the Bartlett and Cameron residents.

Diagnostic survey of edentulous patients.

by H. A. YOUNG, D.D.S.

Journal of Prosthetic Dentistry. January 1955.

It is readily apparent that the great variability in edentulous mouths, in patients, and in patient backgrounds does present many problem factors in denture treatments. It is equally apparent that the need for knowledge, skill, and experience correspondingly vary with the case, and that in some instances the operator possesses a marked deficiency. The operator who does not recognize this personal deficiency will later sacrifice some of his professional reputation on the altar of ignorance and faulty procedure.

The examining routine is, therefore, a double-edged procedure of evaluating the problems to be met and the possession of the abilities to successfully cope with them. This procedure is a protection to both parties concerned. It takes courage and a high degree of integrity to admit one is unequal to the need, and thus refer the patient to an operator who is more qualified.

The needed "know how" to treat difficult cases successfully is gained only

through experience, for schools can give only a limited clinical training and try to indoctrinate an acceptable over-all procedure routine. Private practice calls for an ability to handle correctly the many small variations in form, condition, habit patterns, and human reactions to denture substitutes. LaDue feels that success resides more in this ability to note and compensate for the many small variations than in the strict application of a learned basic routine. There is no one other step in a denture treatment routine which better focuses the operator's attention on normal conditions and their slight variations than this diagnostic survey step. It is difficult to reason why dentists so neglect this one most important step in a denture treatment routine.

There seems no logical reason why the same fee should apply for all denture patients, for the conditions create variable demands on the operator and make each denture an individualized substitute of great value to an edentulous patient. Artificial dentures are perhaps of greater value than other substitutes for human parts if one considers their special abilities to impart a quality of aliveness and beauty, in addition to their remedial and restorative qualities.

PUBLIC RELATIONS

Fees—A common cause of friction between patient and dentist.

Undoubtedly the most frequent complaints respecting dentists are concerned with fees. At least, those bodies representing the profession receive the majority of complaints upon this matter. These complaints may be divided into two categories. (1) Simply that the fee is too high; (2) Why did not the dentist tell me before running up such a bill?

The Fee is Too High

During the last decade it has been exceedingly difficult to determine the reasonableness of price for any commodity. The only practical measuring stick has been one of comparison. The Canadian Dental Association have just completed an economic survey of dental practice for the year 1953 establishing, among many facts, the fee level across Canada. Average fees of Canadian Dentists are also available for the year 1944—a ten-year period. The percentage increase in fees for this period is shown to be 44.7%.

For comparative purposes the Dominion Bureau of Statistics has supplied percentage increases in some other selected items for this ten-year period as follow:

Percentage Change 1944-53	% Change
Consumer Price Index	+ 55
Food	+ 72
Shelter	+ 36
Clothing	+ 65
Household Operation	+ 55
Other Commodities	+ 34
Hospital Rates	+130
Drugs	+ 28

The statistics would tend to indicate that the rise in dental fees on the average has not been excessive.

Variation in the fee charged by the individual practitioner does exist and has always obtained among professional men. The variation has rested for the most part upon demand for services. Admittedly the services of one dentist may be worth more than another owing to better qualifications or natural ability. The introduction of pre-payment plans for health services with published fee schedules for those services has accentuated the interest of the public respecting the question of fee.

A false view which appears to exist in the minds of many laymen is that a dollar paid a professional man is clear profit. This erroneous conception would seem to be very prevalent. Again, analysis of the economic survey just completed shows that while the fees of the dentist have increased on the average 44.7% the expenses of operating a dental practice on the average have increased 63.6%. The result of these changes leave the economic position of the dentist approximately in the same percentage of profit to himself at end of the ten-year period.

These points tend to prove that the dental fee of today is comparatively not excessive.

Why Did Not the Dentist Tell Me

The frequency of this complaint would lead to the conclusion that many dentists do not obtain an understanding with the patient respecting what is involved in the necessary procedures. For the most part this type of complaint does not come from the financially poor patient but rather from those who carefully plan expenditures. They do not actually complain about the actual amount but rather that

they anticipated a much smaller amount.

If the patient fails to make inquiry of the dentist respecting the cost then the dentist is often placed in an awkward position. If he approaches the service for the patient from the stand-point of cost then the patient is apt to conclude that the dentist is only interested in the money involved, at times complaints of this nature are received.

A significant factor in this situation is the difference in evaluation of the service by the dentist and the patient. Perhaps through complete familiarity or in alleviation of the patients' conjectured fear of the result the dentist has a tendency to minimize explanation. In any event the patient, perhaps unconsciously, makes estimate of the fee and anticipates this set amount. If the account when rendered is less the patient is pleased but if the account should be larger the dentist is often severely criticized.

Conclusion

The answer to both these questions is

the same and lies in the sphere of patient education. The time involved is well-spent in creating proper professional relations between the dentist and his patients. Definitely the wrong approach is by abruptly confronting the patient with the cost involved regardless of the patient's inquiry. No necessity exists for detailed explanation of the cost of individual items which form a part of the service. However, detailed explanation should be made of the proposed health service. The benefits should be emphasized and the improvements to be obtained thoroughly explained before commencing service. From such explanation the patient should obtain an increased appreciation of the service and possess a better understanding of what the service involves. Invariably such educative process of the patient leads to, at least, an approximate fee. Thus the understanding reached results in the establishment of excellent professional relations between the dentist and his patients.

THE HAROLD KEITH BOX TESTIMONIAL FUND

The H. K. Box Testimonial Fund is progressing very satisfactorily. The portrait is completed, and will be presented during the joint meeting of the Ontario Dental Association and the Canadian Dental Association in May. A nucleus is already accumulating for the Research Fund, the future effectiveness of which will naturally depend upon the aggregate of the donations. All those interested in broadening the basis of this fund are requested to send their contributions to Dr. R. J. Godfrey, 230 College Street, Toronto, prior to May 15th, so that the fund may be finalized and reported upon at the National Meeting. The Committee gratefully acknowledges the contributions received. Since the donations are not deductible from income tax, and in order to keep charges against the fund to a minimum, receipts are not being issued.

EDITORIAL

The Development of Official Policies

From time to time there are queries presented respecting the development of official policies of the Association. Obviously it is completely impractical if not altogether impossible to hold a meeting at which every member of a national organization is present. In order for a society to function at all it is essential that certain powers and responsibilities be invested in elected representatives of the members. In specific reference to the Canadian Dental Association, the members of the Board of Governors are elected officials of the Association and upon them the responsibilities for the actions of the organization are placed.

The provincial statutory dental corporations form the ten corporate member groups comprising the Canadian Dental Association. The officials of these corporate member groups are duly elected according to the laws of the respective provinces concerned. Each corporate member is then entitled to appoint or elect one of its members to the Board of Governors of the Canadian Dental Association, and is entitled as well to elect or appoint an additional representative for each additional 500 members or major portion thereof. When the representative of a corporate member is elected president of the Association that corporate member may be entitled to elect an additional representative to the Board of Governors for the duration of the said president's term of office. In this way it may readily be seen that a member of the Board of Governors is truly representative of the members of the corporate member from which he has been elected or appointed. Thus, he is responsible to the corporate member for the manner in

which he contributes to the deliberations and decisions of the Association.

It would be impossible under a democratic system to conduct the affairs of our Association without the right of the elected officials to formulate policies and take any necessary actions. It is completely understandable, however, that the elected officials cannot be considered expert in all the various fields in which they are called upon to make decisions. Within the framework of the Canadian Dental Association this fact is taken into consideration before definite policies are consummated. The working bodies of the Association are the more than twenty committees which have been developed to deal with the many and varied problems which must be considered in an organization such as the Canadian Dental Association. These committees are required to report on an annual basis to the Board of Governors. The Terms of Reference set forth the various responsibilities of each committee and in each instance the action of the committee must be ratified by the Board.

Let us consider a specific instance in the development of a policy. It is well known that the Canadian Dental Association has unqualifiedly endorsed fluoridation as a beneficial public health procedure. That endorsement, representing official Association policy, came about in the following manner:

For several years the Research Committee carefully studied and analyzed all available information relating to all aspects of the measure. When the committee arrived at the stage where it was entirely satisfied with the value and safety of the procedure, it reported as

such to the annual meeting of the Board of Governors. This report was then submitted to a reference committee, chosen from among members of the association present at the Board meeting, which brought back a report on the report following deliberation and discussion. This reference committee report advised ratification of the advice of the Research Committee. Following the presentation of the Research Committee report and the report on the report, further discussion at the Board level ensued, culminating in a decision to appoint a special committee to draft a resolution endorsing fluoridation. Upon acceptance of this re-

solution by the Board, the matter became official Association policy.

It is perhaps pertinent to add that the Board of Governors meeting is open to all members of the Association and they are extended the privileges of the floor. Naturally, voting rights are granted only to the members of the Board who are responsible to their constituents.

Other official policies of the Association are developed in a similar fashion. It can then readily be seen that before official enactments are made they are considered carefully and conscientiously in a manner completely in accord with democratic procedure.

Book Reviews

Cancer Review in the Dental School, by

Howard R. Bierman, Leonard W. Towner, David W. Galloway, and John W. Hazlet. Published by McInsh & Co. Ltd., Toronto, p. 153.

As the authors state in their introduction, "the ultimate aim of the Project was to study the learning progress of the dental student. The field of neoplastic diseases was chosen because it involves all disciplines of the school of Dentistry. . . ." There were five essential purposes of the programme:

1. To measure, as accurately as possible, the breadth and depth of factual knowledge of cancer of dental students.

2. To measure growth and integration of such knowledge from year to year at different levels of training in the dental school.

3. To measure the acquisition and retention of cancer knowledge by individual students as they progressed up the promotional scale.

4. To determine the relationships between patterns of instruction and dental students' achievement in cancer, and

5. To compare the dental student with his medical companion as they paralleled one another during the four-year period of teaching.

The material is presented in two parts: Part 1 is a history of the development of the tests and a determination of their validity and reli-

ability by using statistical methods. The tests were to be comprehensive of all aspects of cancer thought to be pertinent to Dentistry and varied in difficulty so that all undergraduate students from freshman to senior year levels could be tested. Finally, the tests were machine scored. Part 2 deals with students performance on the examination. The gain in score from the freshman through the junior year was linear, and then levelled off somewhat in the senior year at which time he knew 56% of the information in the test.

There were three main methods of teaching used by the dental schools: (1) the didactic formal lecture, (2) clinical teaching at the chair and (3) special tumour boards. It turned out that the most effective method was to give a small number of special lecture hours in conjunction with a large number of clinic or tumour board hours. It was further found the effectiveness of these methods was influenced by the motivation of the students, the knowledge and teaching skill of the faculty as well as the previous instruction given to students.

The final chapter deals with comparison of dental and medical students' knowledge. A set of eighteen paired questions were included in both the dental and medical examinations on cancer and it was found that for each class, freshman through senior, the medical students averaged a higher percentage of correct answers.

The difference in scores between medical and dental students reached a maximum at the sophomore year. However, by the end of the senior year the difference was reduced to equal that observed at the freshman level due to the dental student's learning curve being more nearly linear. The latter being the result from the average dental student having been exposed to a better programme of education.

There were certain areas where the dental student scored higher grades. Those were in the proper method of biopsy of a non-pigmented lesion and on items dealing with treatment of localized lip carcinoma and metastases from carcinoma of the tongue. The authors conclude their analyses by emphasizing the importance of active student participation in clinical tasks related to cancer and that student motivation from all sources plays an important role in learning.

H. A. Hunter.

Orthodontics for Dental Students By T. C. White, J. H. Gardiner, and B. C. Leighton. Published by Staples Press Limited, Mandeville Place, London, England. Pages 367. Price: 45s.

As is pointed out in the preface much has been written on orthodontics, yet there is no modern text-book on the subject specifically designed for the undergraduate. The authors are to be commended on this excellent effort to fill not only

this need but also that of the graduate in the practice of general dentistry.

The authors are obviously men of considerable experience in the teaching of undergraduate orthodontics and their text shows a good logical sequence in its outline. The book is divided into four parts. Under Normal Growth and Development the Morphological development of the head and dental arches is outlined as well as the functional development of the masticatory apparatus. Part Two, entitled Abnormal Development, covers malocclusion and its aetiology. In Part Three under Diagnosis, diagnostic aids are described along with the clinical examination of the patient. Finally, under Prevention and Treatment of Malocclusion, methods of preventive and active orthodontic therapy are described. Appliances with their design and construction are outlined both for active treatment and for final retention.

This work, having been written in a slightly different orthodontic environment, describes some appliances which are in more common use in Europe than in America. The Schwartz screw appliances and Andresen appliances are particular examples. Also a few of the orthodontic terms are at slight variance with some we, on this continent, are more accustomed to.

This volume should be a welcome addition to the reference library of the private dental practitioner as well as to the library of dental teaching institutions.

William J. Spence.

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions

BREDOW, M.; Handbook for the medical secretary. 1954, 390p.

CARNEGIE, D.; How to stop worrying and start living. 1951, 306p.

DUBOS, R. J.; Biochemical determinants of microbial diseases. 1954, 152p.

LEWIS, R., & MAUDE, A. Professional People. 1952, 284p.

MACGREGOR, F. C., ABEL, T. M., LAUER, E., & WEISSMANN, S. Facial deformities and plastic surgery. A psychosocial study. 1953, 230p. illus.

PEALE, N. V. The power of positive thinking. 1955, 276p.

The Association

1955 Annual Meeting—Toronto

Board of Governors Meets

May 11th to 14th, 1955

Convention Dates

May 15th to 18th, 1955

Details respecting the programme will be found in the Special Convention March issue of the Journal.

Reduced Railway Fares

The Canadian Passenger Association has granted reduced fares for persons attending the Annual Meeting at Toronto. The reduced fares apply to dependent members of C.D.A. members' families, and members of the Canadian Dental Nurses and Assistants' Association.

The authorized dates for the start of the going journey will be as follows:

From stations on Western Lines — all points west of Fort William and Armstrong, Ont.—May 4th to 10th, inclusive 1955.

From stations on Eastern Lines—Fort William and Armstrong, Ont., and all points east thereof, except Newfoundland—May 7th to 13th, inclusive 1955.

From stations in Newfoundland—May 4th to 10th, inclusive, 1955.

In order to secure reduced fares it is necessary to present Identification Certificate when purchasing tickets. Identification Certificates for this purpose may be obtained by writing: The Secretary, Canadian Dental Association, 234 St. George St., Toronto, Ontario.

Manitoba Increases C.D.A. Support

At the Annual Meeting of the Manitoba Dental Association official action was taken increasing the annual grant to the Canadian Dental Association from \$15.00 to \$20.00 per capita.

Statement of the Research Committee of the C.D.A. re Individual Household Water Fluoridating Units (February 10th, 1955)

Use of individual household water fluoridating units has been suggested as

a method of fluoridating water supplies. This procedure cannot be considered as a substitute for the public health measure of fluoridation of communal water supplies as endorsed by the Canadian Dental Association for the following reasons:

1. Daily supervision and control of fluoride output is practised in the fluoridation of communal water supplies; lack of such control over home fluoridation units constitutes a potential danger.
2. The use of units in individual homes cannot provide the inexpensive and community-wide protection offered by a municipal service.

The Committee is aware of the need to extend the benefits of water fluoridation to areas where public supplies do not exist. However, at present, no evidence of a suitable method of accomplishing this end is available.

Dentistry as a Professional Career

The C.D.A. Council on Dental Education has prepared the subject matter of this leaflet for distribution to students in secondary schools. The leaflet is intended to create interest, give a few facts and state where further information may be obtained. Wide distribution is desirable in the interests of recruitment to the profession. Orders from dental organizations, individuals and others interested will be filled promptly at \$1.00 per 100. Payment should accompany order. Address orders to: Canadian Dental Association, 234 St. George Street, Toronto, Ontario.

New Film — Gateway to Health

Through the kindness of the British Columbia Fruits Limited, the Association has acquired this colour and sound film (20 mins. duration). How proper diet, tooth brushing and adequate dental care help to prevent dental caries are shown. This is an excellent dental health film for lay audiences, either adults or children. Request for loan should be addressed to: The Librarian, C.D.A. Headquarters.

Alberta Backs Fluoridation After Research

The Alberta Research Council has given unqualified endorsement to fluoridation of Alberta's public water supplies.

The council's report, culmination of an exhaustive two-year survey, was issued Saturday by Highways Minister Taylor, council chairman.

Main Points Stressed:

1. The fluoridation proposal calls for addition to drinking water of only enough fluoride to aid in reducing tooth decay not enough to be harmful to general health.
2. There is a "great loss by allowing endless investigations to delay the application of fluoridation" as a health measure.
3. It would have no adverse effect on industries.
4. Fluoridation should be started "only as fast as the qualified engineering staff of the provincial health board can provide supervision."

Mr. Taylor said: "The Government does not plan any immediate action on the report."

It has been studied by the provincial cabinet. The report says the years of research reveal it is not "in any way harmful to health."

A.A.A.S. Council Votes Approval of Fluoridation

The Council of the American Association for the Advancement of Science at its recent meeting adopted a resolution emphatically endorsing fluoridation "as a method for advancing dental public health." Previously, the A.A.A.S. section on dentistry had endorsed the measure. The council includes representatives of each of the 161 member organizations of the A.A.A.S.

Dr. L. I. Duffy, Charlottetown, Appointed to Board

Notification has been received that Dr. Duffy has been officially appointed to the C.D.A. Board of Governors, as representative for Prince Edward Island. This appointment is for a two-year period. Dr. Duffy graduated from McGill University in 1937.

The Dental Students' Register 1954-55

By comparison with the issue of the Students' Register for last year there are 41 more students attending Canadian dental schools. (748 for 1955 compared to 707 for 1954.) With presently available teaching facilities the total possible number that could be accommodated is 808, provided there were no failures or dropping out for other reasons. It is most improbable that this maximum number could be attained.

There were 172 graduates from Canadian dental schools during 1954, which is the lowest number since 1948. Examination of the numbers in the present classes indicates that little if any increase in the number of graduates can be anticipated until increased facilities for teaching are provided.

Toronto University has the only Canadian School of Dental Hygiene. 17 students are reported in attendance this year. The number accepted in a class is limited by lack of facilities. The demand for Dental Hygienists necessitates effort in obtaining increased teaching facilities in dental hygiene.

The ratio of students to population of the provinces shows wide variation. These ratios vary considerably from year to year. Last year Manitoba had the worst ratio, being one student to 44,944 of the population. In this instance the ratio has improved somewhat, being one student to 33,120 of the population this year. This table (Table VII) when compared for several years gives some idea how the dental schools are serving the individual provinces.

The information given as to the num-

ber of applicants last fall is not accurate as duplication may exist where a student applies to several schools. However, these

figures do represent a trend and it would appear that the number of applicants is remaining more or less consistent.

1954 - 1955 DENTAL STUDENTS' REGISTER

(As reported by Deans of the Schools)

Canadian Dental Association, 234 St. George Street, Toronto 5, Canada

TABLE 1

Total Enrolment of Undergraduate Students in the Dental Schools of Canada as of January 1st, 1955

University	Freshmen	Sophomores	Juniors	Seniors	Men	Women	Total
Dalhousie University.....	13	10	12	13	46	2	48
McGill University.....	37	28	36	37	138	—	138
University of Montreal.....	55	38	17	20	129	1	130
University of Toronto.....	75	89	70	79	297	16	313
University of Alberta.....	31	29	28	31	116	3	119
Totals.....	211	194	163	180	726	22	748

TABLE 2

Maximum Number of Undergraduate Students that will be Accepted in a Class in Canadian Dental Faculties

Dalhousie University.....	12
McGill University.....	35
University of Montreal.....	60
University of Toronto.....	65
University of Alberta.....	30
Total.....	202

TABLE 3

Recapitulation of Undergraduate Enrolment in the Dental Schools of Canada 1940-1954 Inclusive

School	Dalhousie University	McGill University	University of Montreal	University of Toronto	University of Alberta	Total
1940-1941.....	31	58	104	210	51	454
1941-1942.....	25	61	118	232	49	485
1942-1943.....	25	67	139	270	53	554
1943-1944.....	22	67	154	255	24	522
1944-1945.....	28	51	162	264	34	539
1945-1946.....	27	73	184	180	54	518
1946-1947.....	38	111	188	340	108	785
1947-1948.....	37	127	208	435	115	922
1948-1949.....	41	146	224	478	123	1012
1949-1950.....	48	147	225	478	136	1034
1950-1951.....	48	145	196	380	114	883
1951-1952.....	49	145	140	300	121	755
1952-1953.....	50	141	111	294	123	719
1953-1954.....	50	142	98	299	118	707
1954-1955.....	48	138	130	313	119	748

TABLE 4
Total Number of Graduates During the Years 1940-1954 Inclusive

School	'40	'41	'42	'43	'44	'45	'46	'47	'48	'49	'50	'51	'52	'53	'54
Dalhousie University . . .	12	7	8	11	6	8	0	10	9	6	11	12	12	14	14
McGill University	13	13	9	26	12	13	5	18	15	34	36	37	36	34	37
University of Montreal . . .	23	14	31	18	37	30	41	86	38	45	42	69	55	20	20
University of Toronto	56	45	40	103	61	58	56	75	24	75	168	152	85	75	69
University of Alberta	13	13	32	8	24	7	0	10	13	20	49	25	27	35	32
Totals	117	97	120	166	140	116	102	149	99	180	306	295	215	178	172

For the Year 1954

	Male	Female
Dalhousie University	13	1
McGill University	37	0
University of Montreal	20	0
University of Toronto	65	4
University of Alberta	31	1
Totals	166	6

TABLE 5
Distribution of Undergraduate Students by Provinces and Foreign Countries in the
Dental School of Canada as of January 1st, 1955

School	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	United States	Hong Kong	British West Indies	Bermuda	Africa	Europe	Puerto Rico	Australia	Great Britain	Totals
Dalhousie University	10	2	23	8							2		1	1					1	48
McGill University	3	2	1	2	62	19	5	1	2	4	28		5	2		1	1			138
University of Montreal . . .		1	1	4	106	4	1	2			6					5				130
University of Toronto	1	2		3	1	275	13	8		6					1			2	1	313
University of Alberta							6	29	53	24		1	1		1	4				119
Totals	14	7	25	17	169	298	25	40	55	34	36	1	7	3	2	10	1	2	2	748

TABLE 6
Additional Students

	Dalhousie University	McGill University	University of Montreal	University of Toronto	University of Alberta	Totals
*Graduate during 1954-55	0	0	0	10	0	10
**Post-graduate during 1954-55	0	0	9	11	0	20
***Occasional during 1954-55	0	0	53	52	0	105
Student Dental Hygienists 1954-55	0	0	0	17	0	17

*The term "graduate" means those dental graduates registered in the Graduate School of a University, proceeding to a degree.

**The term "post-graduate" means those dental graduates registered in a Dental Faculty, proceeding to a degree or diploma.

***The term "occasional" means those dental graduates registered in a Dental Faculty, for courses of long or short duration, but not proceeding to a degree or diploma.

TABLE 7

Computed Data Respecting Relationship by Percentage and Ratio to Population per Province of Origin
of Canadian Students Attending Canadian Dental Schools

Students From	Percentage of Students	*Ratio of Students to Population
Newfoundland.....	1.87	1/28,429
Prince Edward Island.....	.94	1/15,000
Nova Scotia.....	3.34	1/26,920
New Brunswick.....	2.27	1/32,176
Quebec.....	22.59	1/25,964
Ontario.....	39.84	1/16,933
Manitoba.....	3.34	1/33,120
Saskatchewan.....	5.35	1/21,950
Alberta.....	7.35	1/18,891
British Columbia.....	4.55	1/37,235
Canada.....	91.44	1/22,215

*Population figures used are estimates as supplied by the Dominion Bureau of Statistics as of June 1st, 1954.

TABLE 8

Number of Qualified Applicants for Dental Course

University	1945 Apps	1946 Apps	1947 Apps	1948 Apps	1949 Apps	1950 Apps	1951 Apps	1952 Apps	1953 Apps	1954 Apps
Alberta.....	26	59	27	44	50	45	37	40	45	31
Toronto.....	251	?	?	410	290	239	228	206	243	187
McGill.....	87	104	190	165	142	124	118	50	50	135
Montreal.....	157	108	137	135	140	112	72	107	93	133
Dalhousie.....	?	?	?	?	?	?	?	25	20	16

Note: The figures given in this table are not to be interpreted as accurate but rather as comparative indices from year to year. The basis of considering applicants varies from school to school and consequently the figure submitted by one school is obtained by a different method than for another school.

Committees and Councils

Legislation

This interim report of the Committee on Legislation is of necessity brief. All the Registrars of the Provinces have been contacted regarding any new legislation which may have been passed since the annual meeting of the Board of Governors of the Canadian Dental Association at St. Andrews-by-the-Sea.

No new legislation has been reported in Nova Scotia, Alberta, Saskatchewan, and

British Columbia. British Columbia does report, however, that there have been certain additions inserted in the rules, regulations and by-laws.

Quebec reports some amendments to the Quebec Dental Act adopted by the Quebec Legislature and sanctioned on February 22nd, 1955.

Up to the time of writing of this report no other information is available.

L. E. MacLachlan, Chairman.

Survey of Dental Practice—1954

Part IV—Income Related to Auxiliary Personnel and Type of Practice

(a) Specialties

Of the respondents to the questionnaire 92.9% returns were by general practitioners and 6.1% by specialists and 1.0% could not be classified. The percentage of specialists answering the questionnaire was approximately 57% of the possible number of Canadian dentists practising a specialty. Of those making reply 31 were orthodontists, 29 were oral surgeons, 13 were periodontists and 7 were specialists in other specialties. The percentage of replies from the possible number of specialists in Canada was for orthodontists 47%, for oral surgeons 66%, for periodontists 60% and for pedodontists 58%. These relatively high percentages should give reasonably accurate and representative figures as presented in Table XIV.

Of the four named specialties, the mean gross income of the specialist is 16% higher than for the general practitioner, the mean net income of the specialist is 27% higher than that of the general practitioner but the mean expenses of the specialist are only 7% higher than those of the general practitioner. Orthodontists reported the highest net income and pedodontists were second. It may be worthy of note that both these specialties are concerned only with children. Pedodontists reported the highest net as percentage of gross and oral surgeons the lowest percentage, the latter having the highest expenses of any of the specialties.

TABLE XIV 1953 Mean Income of Specialists			
	Mean Gross Income	Mean Net Income	Net as % of Gross
General Practitioners.....	14,617	7,541	51.6
Specialists			
Oral Surgeon.....	16,604	7,836	47.2
Orthodontist.....	20,955	13,759	65.7
Pedodontist.....	16,445	10,914	66.4
Periodontist.....	15,744	8,999	57.2
Other.....	10,698	4,341	40.6

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(b) Employees in the Dental Office

The relationship between the mean number of employees in the dental office and mean income is indicated in Table XV. Observation will be made that the gross income increases with the increase in number of employees. The mean net income also increases but not proportionately as shown when the net as percentage of gross is examined.

TABLE XV Independent Dentists 1953 Mean Income—No. of Employees			
No. of Employees	Mean Gross Income	Mean Net Income	Net as % of Gross
0	8,570	4,700	54.8
.1 - .4	11,756	7,052	60.0
.5 - 1.4	14,922	7,719	51.7
1.5 - 2.4	19,364	10,223	52.8
2.5 - 3.4	20,414	10,169	49.8
3.5 and more	25,319	13,199	52.1

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The percentage of dentists in relationship to the employment of ancillary personnel is shown in Table XVI. The column "Blank" represents those respondents who indicated personnel employed but failed to indicate the province. "Other" indicates combinations of personnel not represented in the list given. The number being small, those employing hygienists were recorded under "Other". 80.9% of the respondents employ ancillary personnel.

Table XVII sets forth the number of chairs together with the ancillary personnel found in the offices of the respondents and relates the varying conditions to income. Although the dentist with only one chair and no employees had a low expense ratio he also had the lowest net income. In general, net income rises as the number of

TABLE XVI
Independent Dentists
Percentage Employing Number and Type of Personnel

	Blank	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	Nfld.	Other	Canada
No. Employees.....	6.7	8.6	8.5	15.7	13.1	17.5	37.9	16.7	25.0	50.0	10.0	19.0	19.1
One Assistant.....	53.3	58.8	55.2	42.7	48.8	51.3	34.2	50.0	45.0	20.0	10.0	51.7	48.3
One Secretary or Receptionist.....	6.7	2.5	4.8	6.8	10.7	4.5	6.8	11.0	16.7	10.0		6.9	5.9
One Assistant and one Secretary or Receptionist.....		2.5	.6	3.4	7.1	2.7	.8			10.0		5.2	2.3
Two Assistants.....	13.3	1.8	4.2	5.6	2.4	1.9	1.1	2.8					2.2
One Part-Time Assistant.....		.6	.6	1.1		1.4	.8						.9
One Technician and one Assistant.....	13.3	2.5				3.3	4.9	2.8	3.3		40.0	1.7	3.0
Other.....	6.7	22.7	26.1	24.7	17.9	17.4	13.5	16.7	10.0	10.0	40.0	15.5	18.3
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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TABLE XVII
Independent Dentists
1953 Mean Income—No. of Chairs and Employees

	Mean Gross Income	Mean Expense	Mean Net Income	Net as % of Gross
1 Chair, no Employees.....	8,269	3,103	4,599	55.6
1 Chair, 1 Secretary or Receptionist ..	11,968	4,895	6,670	55.7
1 Chair, 1 Assistant.....	11,487	6,534	7,415	51.2
2 Chairs, No Employees.....	11,605	4,674	5,643	48.6
2 Chairs, 1 Secretary or Receptionist	14,282	6,316	6,899	48.3
2 Chairs, 1 Assistant.....	16,034	7,598	8,381	52.3
2 Chairs, 1 Assistant and 1 Secretary or Receptionist	23,753	10,964	12,352	52.0
2 Chairs, 2 Assistants.....	19,974	7,910	11,130	55.7
2 Chairs, 1 Technician and 1 or 2 of following: Assistants, Secretaries or Receptionists.....	18,669	8,485	10,034	53.7
2 Chairs, 1 Hygienist and 1 or 2 of following: Assistants, Secretaries or Receptionists ..	20,044	10,024	10,020	50.0
3 Chairs, 1 Assistant.....	15,848	7,272	8,474	53.5
3 Chairs, 2 of the following: Assistants, Secretaries or Receptionists.....				
3 Chairs, 1 Hygienist and 1 or 2 of following: Assistants, Secretaries or Receptionists.....				
4 Chairs, 1 or more Employees other than Dentists.....	49,000	29,000	20,000	40.8
4 Chairs, 1 Dentist and 1 or more other Employees.....				

cda '54 survey of dental practice.

employees and chairs increases. This does not mean that any dentist can increase net income by installing more chairs and engaging more personnel. However, it does indicate that if the demand for services exceeds the capacity of a dentist and his

staff, his net income will increase by the addition of ancillary personnel and chairs.

Part V of this series will present a detailed analysis of the expenses incurred in operating a dental office and will appear in the next issue of the Journal.

PLAN TO ATTEND

THE JOINT C.D.A.—O.D.A. CONVENTION

MAY 15-18, 1955

ROYAL YORK HOTEL, TORONTO

Economic Security

THE JOURNAL is privileged to publish the following article on Wills by Mr. H. Allan Leal, Full-time Lecturer on Wills and Administration of Estates—Osgoode Hall Law School, Toronto. The article will appear in two parts, and will be concluded next month. Ed.

Your Will and Your Family

Part I

by H. ALLAN LEAL

Serious consequences may result from persons dying without having made a will providing for the distribution of their estate on their death. Despite this fact one-third of those persons dying in Ontario alone in 1954, leaving property, were found to be in this position. When the owner of property thus dies intestate the distribution of his estate is made in accordance with the provisions of the applicable statute law. For example, if a man dies leaving a wife and two children then the "statutory will" entitles his wife to receive the first \$5,000 of the estate and 1/3 of the balance or residue. The two children divide the remaining 2/3 of the residue equally between them. This simple distribution may be in accord with the wishes of the deceased regarding the quantum of the shares, if it were possible to consult him, but as will be seen momentarily, this type of distribution provided by the statute creates difficulties and has many inherent disadvantages.

Let us suppose that the deceased dies leaving a widow but no children or issue of them and no next of kin such as father, mother, brother, sister, cousin, etc., then the widow of the deceased would be entitled to receive the first \$5,000 and 2/3 of the residue, and the remaining 1/3 of the residue would pass to the Crown, that is, the government of the particular province concerned. It is questionable whether this also would be in accord with the wishes of the deceased. Under the "statutory will" every estate of

deceased persons is treated in the same manner no matter what the size and nature of the assets may be, and the individual needs of the particular family circle are not a material consideration. The distributive shares provided for under the "statutory will" are absolute interests in the sense that they represent an immediate distribution and give to the person entitled full freedom of control of the property given to him subject to the fact that shares of persons under the age of 21 are paid into court and held for them until they attain that age.

Another important consideration is that the omission to make a will may lead to double succession duty being levied. Assuming again that the deceased dies leaving a wife and two children, the distributive share passing to the widow is an outright distribution and succession duty will be imposed upon the value of that share and the value of the interest passing to the children. If the wife were to survive her husband, even for only one day, there would be another succession duty levied on the value of the interest passing to the children, assuming them to be the ones entitled to her estate. It is possible with a properly drawn will to avoid a double succession and consequent loss to the estate.

If the deceased omits to make a will he has, of course, no control over the person or persons who will be appointed to administer his estate. The law in this event prescribes the persons who are entitled, *prima facie*, to apply for administration and the persons to whom administration will be entrusted, though legally acceptable to the Court may not be the

one whom the deceased would have chosen. Furthermore the powers of an administrator appointed by the Court are seriously circumscribed in order to ensure the security of the estate and the administrator is required to post a bond to secure due administration. It is pertinent to point out that the premium cost of this bond may well exceed the cost of having a will drawn in the first instance.

The legal rules governing the conduct of the administration contain a considerable safety factor and lack the element of flexibility which may be essential for the optimum administration of estates with varied assets. In making a will, the testator is able to provide for extended powers to be given to his executor and may for example, empower the executor to carry on a business which would otherwise have to be sacrificed by sale, on a disadvantageous market, within one year from the date of the testator's death.

If we are to admit then, as I think we must, that a will is essential to avoid the difficulties and inherent weaknesses of intestate succession we may well ask what provisions should be contained in a proper will. It must be said at once that a will is a very personal and highly specialized document which must be drawn not only to accommodate the varied intentions of different testators but it also must be drawn against the varied background provided by the infinite variety in the nature and size of individual estates and the particular family circle. It is for this reason that the availability of printed forms in the local stationer's shop and the drawing of wills by unqualified persons, including the testator himself, are facts to be deplored. All too frequently wills fail either because the formalities prescribed by law pertaining to due execution have not been complied with or because the draftsman has failed utterly to express the intention of the testator in clear and unambiguous terms. Words have a habit of misbehaving and it has been said that many testators spoke as if the office of

language were to conceal their thoughts. A single illustration may suffice.

Let us suppose that the testator provides for a gift of "\$10,000 to the children of Dr. A. and Dr. B." Does this mean "\$10,000 to the children of Dr. A. and of Dr. B.", or "\$10,000 to the children of Dr. A. and to Dr. B." or to phrase it unambiguously, "\$10,000 to Dr. B. and the children of Dr. A."? There remains the further problem whether Dr. B. is to take the same share as each of the children of Dr. A. or a share which is equal to the combined shares of the children of Dr. A. This and similar problems present our courts with the daily task of making sense out of the most ungrammatical and ill-drawn wills and the extent to which they fail, if at all, to carry out that which the testator had hoped to accomplish though, *ex hypothesi*, unexpressed, cannot be blamed on the courts.

Although no single form of will has or can be devised to deal adequately with all situations and the attempt to pour them into a common mould is to be deprecated, yet there are a number of constantly recurring problems in the formulation of wills which warrant further consideration.

GUARDIANSHIP OF INFANT CHILDREN

Where the father of infant children, that is children under the age of twenty-one years, wishes to provide for the guardianship of the person of his infant children in the event of the death of himself and his wife before they have attained their majority, he may do so by appointing such person in his will. Naming a testamentary guardian who is acceptable to the father and mother and who has perhaps signified his acceptance of the responsibility if need should arise precludes the unhappy possibility of their being brought up by relatives who, conscientious though they may be, are not suited for the responsibility. The risk of death of both parents in a common disaster has not been reduced by the present facilities for ground and air travel.

The Corps

Capt. J. M. Smith, Capt. F. D. Charman and Capt. S. W. Muller have been promoted to the rank of Major.

Major Smith, 32, was born in Vancouver, B.C. He served in the R.C.N.V.R. from May 1943 and was discharged in September 1945. Major Smith attended the Faculty of Dentistry, University of Toronto and was appointed 2/Lieut. in the R.C.D.C. in September 1949. On graduation in 1950, he was appointed Captain and has served in No. 12 Coy. R.C.D.C. Halifax and No. 1 Field Dental Unit, Europe. Major Smith is now employed at HMCS "Shearwater", Dartmouth, N.S. Major Smith is married with one child.

Major Charman, 35, was born in Wallace, N.S. He served with the R.C.A.F. from September 1943 to April 1945. Major Charman attended the Faculty of Dentistry, McGill University, and was appointed 2/Lieut. in the R.C.D.C. in September 1948. On graduation in 1949 he was appointed Captain and has served in Europe and No. 12 Coy., R.C.D.C., Halifax. Major Charman is employed at R.C.A.F. Station, Summerside, P.E.I. Major Charman is married and has two children.

Major Muller, 34, was born in Regina, Sask. He served with the C.D.C. in Canada, the United Kingdom and India from July 1940 until February 1946. A graduate of the Faculty of Dentistry, University of Toronto, he was appointed 2/Lieut. in the R.C.D.C. in September 1949, appointed Captain in July 1950. He has served with No. 11 Coy., R.C.D.C., Edmonton; No. 14 Coy., R.C.D.C., Winnipeg, and is now with No. 1 Field Dental Unit in Europe. Major Muller is married and has one child.

Captain W. H. Harrington has been promoted to the rank of A/Major whilst so employed. Major Harrington, 34, was born in Dawdney, B.C. In the R.C.A.F. from August 1941 to February 1942, transferring to the C.D.C. and serving in the United Kingdom and Northwest Europe, being discharged in November 1945. Major Harrington



PRESENTATION OF THE MOORE TROPHY

Lt.-Col. P. S. C. McMillan, A.A. & Q.M.G., New Brunswick Area Headquarters, presenting the Moore Trophy of Lt.-Col. J. E. Merritt, O.C. No. 50 Dental Unit (M), judged the most efficient unit in the R.C.D.C. (Militia) General Efficiency Competition, 1954.

ton attended the Faculty of Dentistry at McGill University and was appointed 2/Lieut. in the R.C.D.C. in September 1949. On graduation in 1950, he was appointed Captain and has served in No. 12 Coy., Halifax, and is now attached to No. 3 Field Ambulance, R.C.A.M.C., in the Far East. Major Harrington is married with two children.

Colonel C. B. Climo addressed candidates on the No. 3 Basic Medical Officers' Course at the Medical Joint Training Centre, Toronto, on 17th February, 1955.

Major H. W. Hart attended the American Denture Society Meeting and the Chicago Mid-Winter Convention. Lt.-Col. I. A. L. Millar, after attending the Chicago Mid-Winter Convention, paid a liaison visit to HQ Medical Field Service School, San Antonio, Texas.

Major G. C. Evans attended the London Dental Society meeting on February 19th, 1955, and presented a table clinic entitled "Abutment Preparations for Crown and Bridge Work".

ROYAL CANADIAN DENTAL CORPS LUNCHEON

P.D.R.—1-3—Royal York Hotel

Wed., May 18, 1955—12:30 p.m.

The Provinces

Alberta

The regular meeting of the **Calgary & District Dental Society** was held in the Sun Room of the Palliser Hotel on Monday, February 7th, 1955, with Dr. Roy Rasmussen, the President in the chair. Thirty-eight members were present.

The minutes of the January 10th meeting were read, following which Dr. W. A. Nixon introduced the speaker of the evening, Dr. George Street. Dr. Street spoke on the subject "The Diagnosis and Interpretation of Malocclusion".

In his opening remarks, Dr. Street commented as a new dentist on the co-operation and good will he had experienced among the dentists in Calgary, and pointed out the help this is to a young dentist beginning practice. Dr. Street stated that in Orthodontia as well as in other branches of dentistry the emphasis is on prevention. He said that Orthodontists can control pretty well all other factors in malocclusion except the Inherited Growth Potential. His address was a very practical one for general practitioners and pointed out a number of ways in which the "G.P." can exercise preventive measures and forestall malocclusion in a great number of cases. His talk was illustrated by Kodachrome Slides well received by the members present. The speaker was thanked by Dr. K. C. Gray.

Dr. W. A. Nixon gave a short report on the Dental Health Week meeting he had attended in Edmonton. Some discussion followed on just how great a part, if any, the subject of "Fluoridation" should play in our speeches during "Dental Health Week". It was suggested by Dr. Powell that the committee in charge should list "do's" and "don'ts" for Speakers Panel Members when talking about fluorine during their speeches. Dr. Gerry Locke suggested that rather than having sample speeches for the members of the Speakers Panel that a list of headings could be prepared as suggestions from which the speakers could prepare their own speeches and thus make them more effective.

A letter was read from Mr. E. L. R. Williamson of the C.D.A. Pension Assurance Trust Fund giving a tentative itinerary for his proposed visit West in May. The President introduced two guests from the Canadian Dental Corps of Currie Barracks, Lieutenant Col. Gabriell and Major Cornish. The members were reminded of "Ladies' Night" to be held this year on March 18th, and an announcement of a change in Curl-

ing dates for the next meet from February 25th to March 4th, was noted.

Dr. E. R. Upton speaking for the Alberta Dental Assoc. announced that the services of Dr. Harding of San Diego had been secured for a full day clinic on April 14th, the day preceding the Alberta Dental Board Meeting in Calgary. Dr. Harding is a practising Dentist who has made quite a study of Dental Economics in all phases. It is proposed that Dr. Harding will speak to the Dental Assistants in the morning while the Dentists are attending the Annual Meeting. Then he will lecture to the Dentists in the afternoon and evening, and this will be followed by the Alberta Dental Association Board Meeting on Friday and Saturday of that week.

The President reminded the members of the Canadian Dental Association Presidential Visitation on the Friday, February 25th, 1955, when an evening meeting would be held in the Palliser Hotel. Dr. P. G. Anderson, the President of the Canadian Dental Assoc. and Dr. Don Gullett, the secretary, would be with us on that occasion.

The meeting was adjourned.

W. R. U.

The **Calgary & District Dental Society** held a special meeting in the Palliser Hotel on February 25th honoring the visit of the President and Secretary of the Canadian Dental Association.

Dr. P. G. Anderson was introduced by Dr. R. R. McIntyre, President-elect of the CDA and Dr. Anderson's address was enthusiastically received by the members present.

Dr. Gullett's review of the 1954 Survey of Dental Practice stimulated great interest. Both speakers were thanked by Dr. James Zimmerman, President of the Alberta Dental Association.

It was announced that the Annual meeting of the Alberta Dental Association will be in Calgary, April 14, 15, and 16, and the guest speaker will be Dr. J. C. A. Harding of San Diego who has been associated with a number of activities on matters of economic importance to Dentistry.

The winter meeting of the **Peace River Dental Society** was held in Grande Prairie on February 9.

The following were elected to office:

President — Dr. G. L. McMurray; Vice President — Dr. L. P. Lyman; Secretary Treasurer — Dr. J. Higa; Directors — Dr. D. O. Carroll, Dr. M. Woronuk.

J. H.

The **Lethbridge and District Dental Society** held its February meeting at the El Rancho Banquet Room on Wednesday, February 16th. Supper was followed by a discussion of Society business. Plans were laid for Dental Health Week to be observed April 25-30. After the business session a film on Dental Anaesthesia was shown which was enjoyed by all.

D. A. R.

Newfoundland

The Annual Meeting of the **Newfoundland Dental Society** was held at St. John's 30th January to February 2nd, 1955. The President, Dr. P. G. Anderson and Secretary, Dr. D. W. Gullett, of the Canadian Dental Association and Dr. H. K. Brown, Dept. of Health & Welfare, Ottawa attended, as did many out-of-town members, as well as the Dental Officers from Pepperell Airforce Base here in St. John's.

A very enjoyable cocktail party was tendered the members and guests by Dental Supplies Ltd., St. John's on the 29th January.

A very heavy business agenda was covered at several business meetings of the Society. These meetings and lectures were held at the St. John's General Hospital, the Base Hospital at Pepperell Airforce Base and the Newfoundland Hotel.

On Monday afternoon the 30th January, a paper and clinic was presented at Pepperell Air Base Hospital on immediate denture technique by Captain Brown of the Base Dental Clinic Staff. This was followed by Dr. P. G. Anderson, President of the C.D.A. who presented an illustrated lecture on some tips and hints on crown and inlay preparations, which was followed with great interest by the members of the society.

The Annual Dinner was held at the Newfoundland Hotel on the evening of the 30th January, at which Honourable Sir Leonard Outerbridge Kt., C.B.E. D.S.O., Lt. Governor of Newfoundland and Colonel W. H. Wise, Commander Pepperell Airforce Base were special guests. Speakers of the evening were Dr. R. W. Ball, President Newfoundland Dental Society, Dr. P. G. Anderson, President of the C.D.A., Dr. D. W. Gullett, Secretary of the C.D.A., and Dr. H. K. Brown, Dental Consultant, Department of National Health and Welfare,

Ottawa; and His Worship H. G. R. Mews, Mayor of St. John's. Guests of members, and representatives of press and radio also attended.

During the evening, Captain Anthony Lubeck of Pepperell Air Base entertained the gathering with a very enjoyable magician show.

On Tuesday 1st February, Dr. D. W. Gullett, gave an illustrated talk on some economic aspects of dental practice in Canada.

Members of the Newfoundland Dental Society and visiting dentists were tendered a luncheon at the Officers Mess, Pepperell Airforce Base, following which on Tuesday afternoon at the Newfoundland Hotel, Dr. H. K. Brown gave a lecture on fluoridation of water supplies for benefit of members of the St. John's Municipal Council and other dignitaries as well as representatives of radio and press.

The final business meeting of the society was held at the St. John's General Hospital Wednesday 2nd February after which Dr. H. K. Brown presented a talk giving his listeners some information and general aspects of dental public health across Canada.

The Annual Meeting concluded at Pepperell Airforce Base in the afternoon 2nd February when live clinics in endodontics etc., were put on by the Base Clinic Staff members.

G.E.M.

Quebec

On January 7, 1955 **The Mount Royal Dental Society** started its 1955 programme with an all day illustrated lecture on Periodontics. The guest clinician was Dr. C. H. Williams of Toronto, a member of the Department of Periodontics at the University of Toronto and a practising periodontist in that city. Dr. S. Silver presided in the absence of the President, Dr. I. B. Hyams.

The morning session was devoted to a discussion of slides of periodontal interest. The findings, both laboratory and clinical, tend to show that vigorous function has a desirable influence on the teeth and supporting structures.

Another interesting topic was the influence of function of the teeth on facial proportion. Dr. Williams submitted results of his own research on this topic to show that facial proportion is maintained even though the teeth become worn in function.

The afternoon session was devoted to the subject of occlusal correction by grinding. The technique for the determination of occlusal correction was thoroughly discussed under the headings of objectives and procedure.

Dr. Williams stressed the importance of occlusal correction before operative restorative work started. The aim should be to correct a deformity not to perpetuate it, stated the clinician.

The prevalence of tooth brush abrasion was then discussed. Much of this is due to improper tooth brushing and should not be confused with erosion. Dr. Williams suggested the use of the primitive chewstick as one answer to this problem.

The speaker was thanked on behalf of the Society by Dr. S. Cripps, and the meeting then adjourned. M.E.

Montreal Dental Club

A dinner meeting was held at the Queens Hotel, Monday, Feb. 21, 1955, under the chairmanship of Dr. G. P. Kelly, the president for the 1955-1956 season.

Dr. D. McDonald reported to the club on the winter meet held at the Alpine Inn the weekend of Feb. 11-13. As an innovation this year it was a mixed affair with wives, girl friends, and what have you, invited. It was noticed that a certain member, who was very loquacious in his demands that the meet be kept stag, was much in evidence with the gals. As a closing suggestion Dr. McDonald felt that the executive should look into interesting the younger members for future meets.

The guest speaker of the evening was Dr. W. C. Bushell, whose subject was, the use of hydrocolloid for inlays and bridges.

Dr. Bushell commenced, by broadly outlining certain basic principles in cavity preparation, stressing the use of water spray when cutting with diamonds and carbides even when a local anaesthetic was employed, to decrease heat generated and to keep stones from clogging. He also showed the advantages of using the rubber dam, and felt that in all deep seated cavities a sedative such as CAOH_2 should be used in conjunction with the cement base, and much future root canal work could be avoided.

Dr. Bushell stressed the necessity of gingival retraction before taking impressions as the material will not, through pressure, retract it, and of the necessity of good cavity preparation.

Certain suggestions which he put forward were:

(1) Necessity of avoiding undercuts and suggested that walls be flared more than usual.

(2) Use of wet and dry discs on long mandrels to establish good margins and taper.

(3) The ease with which pins can be

used for added retention with the hydrocolloid technique.

(4) Always bevel and smooth occlusal margins.

(5) Always remove old amalgam before cementing inlays, as a chemical reaction ensues and breaks the cement bond.

Certain advantages which Dr. Bushell stated with the hydrocolloid technique were:

(1) Complete reproduction and sharp detail of preparation.

(2) Ease of reproducing awkward to get at areas with other impression techniques.

(3) Time saver, — where there are multiple preparations all can be taken with the one impression.

(4) The adaptability to mouth reconstruction.

(5) Due to accuracy less time is spent in adjustments in the mouth.

(6) Inlays and crowns may be made with partial dentures in place to reproduce rest areas, etc.

(7) Pin ledge inlays can be used in place of three-quarter crowns.

The technique of hydrocolloid impression taking was described. The equipment such as syringes, conditioner and water cooled trays were illustrated. Dr. Bushell emphasized that ice water, or tap water in winter in Montreal, should not be used.

The syringes and hydrocolloid are boiled for at least 8 minutes, — longer boiling will not affect the material. They are then stored in water tank at 150°F . The syringe is taken directly out of the storage tank and injected into the cavity making sure no air is trapped. The tray is filled from the tube in the storage tank and then conditioned in 105°F for 5 minutes to be mouth tolerable; prior to inserting in mouth the hydrocolloid is gently dabbed with a towel to remove moisture.

The cavity must be completely dry before taking impression, and the impression must be held for 4 minutes without movement. The patient must not close on it or swallow as distortion may follow.

The impression should be poured in die stone within 30 minutes and stored during this time in 2% potassium sulphate solution.

It was shown how bridges could be completed in two appointments, although Dr. Bushell did not advise this, as he felt all inlays should be first checked in the mouth.

In bridge preparations he feels two impressions should be taken, one for removable dies to make inlays upon and a solid model to construct bridge upon.

A number of X-rays were shown, to demonstrate accuracy of technique, its versatility in mouth reconstruction and its limitations. An open question period was then held.

D.J.M.

British Columbia

The **B.C. Dental Association** in executive conclave decided to invite dental technicians to the May convention. A similar decision has been taken by the Vancouver and District Dental Society.

It is a move to improve relations between the ethical laboratory group and members of the profession. The motion, sponsored by the Laboratory Committee, reads: "That certain technicians be invited to certain portions of the B.C. Dental Conventions when a programme is deemed to be of specific interest to them." Those invited would include the following: (a) members of the Dental Laboratory Association of B.C., and (b) individual technicians whose names have been submitted by a member in good standing of the B.C. Dental Association, and who have been approved by the Executive of the association.

The January meeting of the **Fraser Valley Dental Society** was held in Abbotsford when a clinic was given by Dr. John Gansner of Vancouver on "Direct and Indirect Gold Inlays". Several short films were shown.

In February Dr. Max Nacht, Vancouver paedodontist, held forth on the topic "Treatment of the Aching Primary Teeth". The presentation was greatly appreciated, as general practitioners are continually confronted with such problems.

Dr. Hamilton Simmons, oral surgeon, Vancouver, provided an interesting surgery clinic at Shaughnessy Hospital in March. The Fraser Valley dentists, after going easy on lunch, came en masse to the White Spot for dinner before partaking of Dr. Simmons' fare at the Hospital (most travelled about 80 miles).

On March 1st the **Vancouver and District Dental Society** convened in the Panorama Room of the Hotel Vancouver to hear addresses by officials of the Canadian Dental Association.

Dr. P. G. Anderson, President, said it was his first trip west of the Rockies, and that the duties of his itinerary caused him no concern because it was known that the C.D.A. president went about with a worried look on the face of the C.D.A. secretary.

He spoke in a scholarly fashion on "Standards By Which Our Profession Is Appraised". Referring to the devoted men of the past, he claimed it important that we rescue some of their ideals in charting the future.

"Our efforts to control dental disease have not been too successful. It is true that our techniques have improved, but

only about one-quarter of the people of Canada receive adequate dental service. Certainly more dentists are needed, but treatments do not get at the root of the matter. Research is necessary. If only a fraction of the amount spent on treatments in a country like Great Britain, which has a National Health Programme, were spent on controlled and directed dental research, a more favorable result would be attained.

"To what are we directing our energies? Our success depends not on numbers of dentists, techniques nor balance sheets; but upon administration and individual wisdom and effort to chart the course for the future."

Introduced by Dr. Harold Cline, a past-president of the C.D.A., Dr. Don Gullett, Secretary, said he was pleased to receive a flattering introduction from his former "boss", and that unlike most workmen he had a new "boss" every year. His fine address, punctuated with anecdote, was devoted mainly to the C.D.A. questionnaire about dental practice in Canada. There followed an interesting question and answer period during which Dr. Gullett gave enlightenment upon many current problems.

The thanks of the Society were suitably expressed to the officials of our parent organization by Dr. George Darts and Dr. Murray McDougall.

Dental Health will be the subject of a day-long conference in the Hotel Georgia, Vancouver, on May 5th, the day preceding the annual B.C. convention. The meeting, under the chairmanship of Dr. Arthur Poyntz, is planned for dentists who participate on a part-time basis in community preventive dental clinics in British Columbia, and for representatives of lay organizations sponsoring such clinics.

D. H. M.

New Brunswick

The **Fredericton Dental Society**, at its recent annual meeting, reaffirmed the principle of the fluoridation of communal water supplies, and urged the city of Fredericton to take action in this regard at the time of the inauguration of the new water supply.

A resolution to this effect was passed following a talk by Dr. R. Langstroth, director of dental health for the province, who advocated the fluoridation of Fredericton's new underground water supply.

During the meeting, Dr. J. C. S. McMullen was elected 1955 president of the Society. Other officers elected were: Dr. E. M. Wilson, honorary president; Dr. A. W. Good, past president; Dr. K. A. Hether-

ington, vice president; Dr. R. H. Dolan, secretary; and Dr. R. M. MacGibbon, treasurer.

Guest speaker at the meeting was Dr. W. O. Mulligan of Saint John. Dr. Barney Ross gave an interesting talk on a recent trip to Mexico, and another guest was Dr. Gibson, of New York City.

At a meeting of the **Saint John Dental Society**, Dr. James O'Brien, general chairman of the combined C.D.A. and N.B.D.S. Convention held at St. Andrews last year, was presented with an inscribed silver tray as a tribute to his work by Dr. A. J. Coughlan, past president of the C.D.A., on behalf of the New Brunswick Dental Society.

The guest speaker at the meeting was J. Esmonde Cooke, Dean of the Maritime College of Pharmacy; he spoke on "The Role of the Practising Pharmacist Today". He also showed a film demonstrating the use of gelfoam in oral surgery.

Dean Cooke was introduced by Dr. John G. Blackmer, and thanked by Dr. A. D. Bona. Dr. Reginald F. Sansom presided at the meeting.

Dental Societies—New Brunswick

The New Brunswick Dental Society:

President—Dr. R. H. Bingham

Vice Pres.—Dr. E. J. Leger

Sec. Treas.—Dr. S. K. Wetmore

The North Shore Dental Society:

President—Dr. F. E. Sproul

Sec. Treas.—Dr. C. A. Hayward

The Moncton Dental Society:

President—Dr. R. B. DeWare

Sec. Treas.—Dr. S. C. Geddes

The Fredericton Dental Society:

President—Dr. J. C. S. McMullen

Vice Pres.—Dr. K. A. Hetherington

Sec. Treas.—Dr. R. H. Dolan

The Saint John Dental Society:

President—Dr. R. F. Sansom

Vice Pres.—Dr. E. D. Halford

Secretary—Dr. A. Steuermann

Treasurer—Dr. J. G. Blackmer

Saskatchewan

The Annual Visit

Dr. P. G. Anderson and Dr. D. W. Gullett, the President and the Secretary, respectively, of the Canadian Dental Association, have just completed their tour of visitations across Canada.

The subject of the address given by Dr. Anderson was "A Philosophy in an Organized Profession", and that of Dr. Gullett was "The Economics of Dental Practice in Canada". Both addresses were befitting the

esteemed positions occupied by these men. It behooves all dentists to avail themselves each year of the opportunity to hear and meet the President and Secretary. These gentlemen are contributing yeoman service and are the substantial builders of the profession of Dentistry for tomorrow. We are all greatly indebted to each for their service for the benefit of all. Their visitation is moulding the profession and enhancing the status of Dentistry. L.D.H.

Ontario

The **Kingston and District Dental Society** met recently at Morrison's Lounge, Doctor R. J. Godfrey, professor of prosthetic dentistry at the Faculty of Dentistry, University of Toronto, was the guest speaker. He spoke on oral diagnosis and treatment planning for partial denture construction. Approximately 25 dentists were in attendance, including visitors from Brockville and Sharbot Lake.

Doctor Stan. Watson presided at the meeting and he announced that the Society had commenced regular monthly meetings of a study group to discuss various dental subjects.

At the annual meeting of the **Thunder Bay Dental Association**, Dr. C. A. Shaffer of Fort William was elected President for 1955. Other officers named were Dr. W. B. Macdonald of Port Arthur, vice president, and Dr. W. M. Kostyshyn, Fort William, secretary.

Dr. A. E. Kaukinen of Port Arthur, retiring president of the Association, presided at the meeting.

The **Ottawa Dental Society** recently sponsored a refresher course in operative dentistry, conducted by Dr. R. A. Clappison. Dr. Clappison described in detail, with the aid of slides, new developments in the profession, including the use of high speed equipment. This course took the place of the Society's monthly meeting.

Dr. Clappison was introduced by Dr. Al Younger, and thanked by Dr. Ira Hamilton. Dr. M. M. Derrick, president of the Society, presided at the meeting.

Manitoba

At a meeting of the **Manitoba Dental Association** the following three members were elected to the Board of Directors: Dr. W. J. Riley and Dr. J. O. Brown, both of Winnipeg, and Dr. W. R. Harwood of Brandon. Dr. J. B. Rumberg was elected president of the Association, Dr. W. J. Riley, vice-president, and Dr. J. F. Morrison, secretary-treasurer and registrar.

General News

The following report was tabled in the House of Commons by the Minister of National Health and Welfare, the Hon. Paul Martin, on the request of Mr. J. H. Proudfoot, a private member from Pontiac-Témiscamingue. The question as submitted by Mr. Proudfoot was — "Has it been definitely proved that one part per million of fluoride in a water supply will help to prevent tooth decay?"

The tabled answer read—"Yes, to the extent of about 65 per cent. This has been proved by research studies carried out in Canada and in the United States, including one conducted by the Department of National Health and Welfare over the past eight years working in co-operation with the departments of health of the province of Ontario, Brant county, Lambton county, and the city of Stratford."

Correspondence

Mental Attitude?

To the Editor,

Dear Sir,

Why do many people find that work causes fatigue and yet these same persons will spend an equal amount of time at golf, tennis, gardening, etc. and find that the latter type of exertion fails to cause a like weariness?

Aristotle, in a passage of the "Politics" says,— "The whole of life is divided into two parts, business and leisure, War and Peace, and all our actions are divided into such as are necessary and useful and such as are fine. Our choice between these classes of actions must necessarily be determined by our preference for the higher or lower part of the soul and their respective activities; we must choose War for the sake of Peace and business for the sake of leisure, what is useful and necessary for the sake of what is fine."

This analysis of over two thousand years ago would, on the surface, appear to hold today. We have, however, made some progress as to the cause of fatigue, the effect of psychologic attitudes upon body function, the theory of stress, etc. I therefore pose the question to the average dentist (the successful have answered the question), why should not your necessary and useful task also be fine to the extent of providing enjoyment and thus reduce fatigue?

In every sport there is a challenge. Few of us become stars, yet we struggle toward the ideal when playing a game. What prevents our achievement of the same attitude of mind while performing "the daily round, the common task?"

I suggest that it is a source of real satisfaction to have a patient say,— "Do you know, Doctor, this is the first time I have ever had my teeth

cleaned the way in which you have just performed the operation. All the other times, I was splashed with flavoured suds and my gums were rubbed sore with some brush in the engine. The way in which you so skillfully cleaned the teeth under the gum edge by hand and the careful polishing, together with the care with which the debris was removed between the teeth, has left my mouth with such a feeling of freshness and well-being, that I even feel younger".

How many times has it happened that after extensive faithful restoration of decayed or poorly filled teeth, the patient has remarked on the fact that, for the first time in years he can eat celery and corn without having particles caught between the teeth.

Is it not even restful for the dentist to be told that the teeth mesh together so freely and so efficiently that eating is once more a satisfaction and a pleasure?

Some dentists still try to avoid the treatment of children. No challenge to public service has such rich rewards, both morally and materially as the effective, preventive treatment of the teeth of the child patient. The very contact with youth is rejuvenating; their confidence and loyalty is so inspiring that what may have been thought to be a chore becomes a stimulating test of skill with satisfactions far greater than breaking par in golf, etc. It should also be remembered that children "grow up" and are the most positive insurance of a continuing practice.

These are but a few rambling thoughts about a profession which I love and consider to be worthy of a dentist's best efforts; efforts which need not cause undue fatigue if performed without tension, inspired by an alert mind which has time for keen, sympathetic observation of each patient.

D. Prescott Mowry.

Come to the

PRESIDENTS' BALL

in the

ROYAL YORK CONCERT HALL

TUESDAY, MAY 17

It's to be "A Gay Nineties" Evening

Music by

Mart Kenney and His Western Gentlemen

with

Norma Locke as Vocalist

Cocktail and Social Hour and Entertainment 6.30—7.30

Dinner at 7.30

Floor Show and Dancing until 1.00 a.m.

Tickets: \$10 a couple

Dress Optional

*This is to be the outstanding social event of the Joint Convention of
the Canadian Dental Association and the Ontario Dental Association.*

DON'T MISS IT!



JOINT CONVENTION
of
The Dental Nurses' Alumnae Association of Canada
and
The Canadian and Ontario Dental Nurses' & Assistants' Association
Royal York Hotel, Toronto

Sunday, May 15

- 6:00 P.M. — Reception
8:30 P.M. — Musicale

Monday, May 16

- 8:30 A.M. — Registration
10:15 A.M. — Opening Ceremonies
11:15 A.M. — Dr. David Mitchell — *"Cleft Palate"*.
12:10 P.M. — "Happy Gang Programme".
2:00 P.M. — Miss D. Thistlewood — *"Trend of the Times"*.
3:00 P.M. — Dr. Albert A. Antoni — *"What the Nurse-Assistant
Should Know About Oral Surgery"*.
4:00 P.M. — O.D.N. & A.A. Table Clinics.
6:30 P.M. — 24th Annual Banquet.

Tuesday, May 17

- 9:15 A.M. — Dr. Volker, Dean, School of Dentistry, University of
Alabama.
10:15 A.M. — Mr. Lofts — *"Camera Ramblings, East and West"*.
11:00 A.M. — Mrs. H. J. Mullett — *"Two Years Under Communist
Government"*.
11:45 A.M. — Meeting O.D.N. & A.A. Board of Governors with mem-
bers of the Independent Affiliated Association.
2:15 P.M. — Dr. Helen Reid — *"Three Flights Up"*.
3:00 P.M. — Miss Bessie Peterson — *"Progress by United Effort"*.
3:15 P.M. — Dr. J. Cyril Flanagan — *"The Profession and the Living
Agent"*.
4:00 P.M. — C.D.A. Meeting.
5:00 P.M. — Advisory Board Meeting and O.D.N. & A.A. Board of
Governors.

Wednesday, May 18

- 9:30 A.M. — Dr. F. D. Ostrander.
10:15 A.M. — Mildred Rosenberg — *"Patient Education"*.
10:30 A.M. — O.D.N. & A.A. Annual Business Meeting.
12:30 P.M. — 24th Annual Luncheon.
2:00 P.M. — Table Clinics.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1955	Toronto, Ontario	May 15th—18th
1956	Banff, Alberta	June 3rd—6th
1957	Winnipeg, Manitoba	June 23rd—26th

FUTURE EVENTS

Date	Function	Location	Officer	Address
Apr. 25	Dental Club	Montreal	Dr. Gordon Kelly	1414 Drummond St., Montreal.
May 6-7	British Columbia Dental Association	Vancouver	Dr. R. E. Cline	925 W. Georgia St., Vancouver, B.C.
May 14	Soc. of Dentistry for Children	Toronto	Dr. D. Anderson	4925 Dundas St. W. Toronto.
May 15-18	Joint Convention C.D.A.-O.D.A.	Toronto	Dr. Don W. Gullett	234 St. George St., Toronto.
June 19-23	Annual Berkshire Conference	Lennox, Mass.	Dr. Irving Glickman	Tufts College Dental School, 136 Harrison Ave. Boston 11, Mass.
June 26-29	Western Canada Dental Society	Regina	Dr. W. K. Martin	708 Broder Bldg., Regina.
July 11-14	American Dental Soc. of Europe	Amsterdam	Jas. P. Molony	110 Harley St., London W.1. England.
Aug. 14-20	Federation Dentaire Internationale	Copenhagen	W. Riis Klausen	1 Alhambravej, Copenhagen V.
Oct. 23-27	American Institute of Dental Medicine	Palm Springs, Calif.	Miss Marion G. Lewis	2240 Channing Way, Berkeley 4, California.

SHORT GRADUATE COURSES

Date	Course	Location	Address
Apr. 25-29	Periodontics	University of Toronto	The Dean, Faculty of Dentistry, University of Toronto, 230 College St., Toronto, Ont.
Apr. 25-29	Full Denture Implants	Tufts College Dental School	Dr. Irving Glickman, Tufts College Dental School, Div. of Postgraduate Studies, 136 Harrison Ave., Boston 11, Mass.
May 2-6	Dental Oral Surgery & Anaesthesia	University of Toronto	The Dean, Faculty of Dentistry, University of Toronto 230 College St., Toronto.

CLASS AND FRATERNITY FUNCTIONS

Class	Function	Date & Time	Place	Officer
2T3	32nd Reunion Dinner	May 16 6.30 p.m.	P.D.R. 9, Royal York Hotel	Colton Bliss, 170 St. George St., Toronto.
2T5	30th Reunion Dinner	May 16 6.30 p.m.	P.D.R. 8, Royal York Hotel	Lloyd M. Grose, 663 Greenwood Ave., Toronto.
3T0	25th Reunion Get-together Party (with wives)	May 15 4.00 p.m.	138 Lytton Blvd.	Bill Dewar, 138 Lytton Blvd. Toronto
3T0	Reunion Dinner	May 16 6.30 p.m.	Library, Royal York Hotel	as above
3T5	20th Reunion	May 16 6.30 p.m.	Details later	Earl Bancroft, 86 Bloor St. W. Toronto
4T0	15th Reunion	Further details later		Gordon Doan, 170 St. George St. Toronto
4T5	10th Reunion Dinner	May 16 6.30 p.m.	Royal York Hotel	R. J. Murray, 758 Broadway Ave. Toronto
5T0	5th Reunion Party	May 16 (Class members will be notified of further details)		Ewart A. Jones, 11 Barker Ave. Guelph.
5T1	Reunion Dinner	May 16.	Details later	Lionel Metrick, Ste. 208, 150 Metcalfe St., Ottawa, Ont.
5T3	3rd Reunion Dinner	May 16 6.30 p.m.	P.D.R. 10, Royal York Hotel	C. G. Montieth, 2842 Bloor St. W. Toronto.
Alpha Omega Fraternity	Annual Closing Dinner	May 16 6.30 p.m.	Tudor Room, Royal York Hotel	Ben Gross, 816 Bathurst St. Toronto.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Endodontie et ionophorèse*

par PAUL DIONNE, B.A., D.D.S., Joliette, Qué.

Le sujet qui nous concerne ce soir présente en lui-même un avancement technique qui attira vivement mon attention, il y a environ un an. J'ai moi-même depuis ce temps adopté cette technique. Les résultats obtenus m'ont prouvé d'ailleurs l'efficacité de ce mode de traitement, et ce sont précisément ces résultats qui m'ont amené devant vous ce soir. Je ne me présente pas à vous comme un spécialiste, mais simplement comme un praticien général qui, après de multiples expériences, a obtenu des résultats merveilleux et désire vous les communiquer. Il est bien entendu que je ne ferai aucune comparaison avec les autres techniques et n'en commenterai aucune autre. Si j'ai accepté de venir exposer ce "modus operandi" c'est d'abord pour répondre au désir de votre président, et puis vous montrer les résultats, bons ou moins bons, obtenus durant les quinze derniers mois avec une technique que je trouve facile et pratique pour le praticien général.

Dans le traitement des pulpes gangreénées et d'inflammation périapicale, l'extraction de la dent est trop souvent considérée comme l'unique remède plutôt qu'un moyen, et aujourd'hui, avec l'évolution de la science, nous devrions considérer ce moyen comme très primitif, comme une opération destructive et très souvent inutile. Le curetage de la région apicale, quoique moins mutilant, est plutôt limité. Il reste donc les traitements radiculaires, qui ont prouvé une certaine efficacité, surtout dans les canaux que les multiples variétés d'antibiotiques peuvent atteindre. Cependant, cette technique présente quelque difficulté, c'est-à-dire, les dents multiradiculaires avec des canaux inaccessibles et insondables. Le Dr Pierre BERNARD de Paris a aujourd'hui trouvé la solution à ce problème grâce à son appareil Ionophore-Intégrateur, dont la principale qualité est de permettre un accès dans tous les canaux, "même ceux qui sont inaccessibles aux procédés mécaniques". En effet, il assure la désinfection des canaux radiculaires inaccessibles ainsi que celle de tous les canaux secondaires apicaux, et prépare de même la lyse des

* Communication présentée à la Société d'Endodontie de Montréal, en novembre 1954.

débris organiques, laquelle lyse est indispensable au remplissage total des canaux.

Pour rendre bien claire la compréhension de cette technique, étudions tout d'abord les processus de l'ionophorèse et les phénomènes qui s'y rattachent. Dans le traitement par médication électrolytique, comme l'iode Churchill, (ionisation) un électrolyte iode I^3 de forte concentration est substitué à l'électrolyte NaCl déjà contenue dans les canaux. Ces ions I^3 pénètrent intimement dans tous les canaux puisque la pénétration est nécessaire pour permettre au courant d'aller partout. Mais l'application est de longue durée. Avec l'ionophore-intégrateur, cette application est courte et sans interposition d'électrolyte médicamenteux. *"C'est un électrolyte nouveau, sans relation avec le milieu dentaire, qui se constitue spontanément et qui forme des ions négatifs appelés: ions OH^- , ions libres et très actifs provenant de l'eau contenu dans le canal radiculaire.*

L'ionophorèse

Voici ce qui se produit: l'électrode négative (un fil barbelé) est placée dans la chambre pulpaire, tandis que l'électrode positive constituée par un cylindre métallique est tenue dans la main. Le courant s'en va dans les canaux de la façon suivante: le chlorure de sodium NaCl du corps, dérivé de l'humidité du canal radiculaire, est composé d'ions sodium Na^+ chargés positivement, et d'ions chlore Cl^- chargés négativement. Par conséquent, les ions chlore Cl^- sont repoussés vers la région apicale. Les ions sodium Na^+ chargés positivement sont attirés vers l'électrode négative; nous avons donc deux courants d'ions allant dans deux directions opposées. Les ions sodium Na^+ , en atteignant l'électrode négative, perdent leur charge électrique positive et deviennent atomes, c'est-à-dire du sodium métallique (électrolyse primaire). Mais par contact avec l'humidité, le sodium réagit en décomposant l'eau et donne: $HOH + Na = NaOH + H$ (hydrogène) (électrolyse secondaire).

Cette soude caustique Na^+OH^- , nouvel

électrolyte, est formé: 1- d'ions positifs Na^+ qui seront encore attirés par l'électrode négative où ils formeront encore du sodium, puis de la soude; 2- d'ions hydroxides OH^- (négatifs) qui se déplaceront dans la direction de l'apex pour être substitués aux ions Cl^- dans le contenu du canal. Donc l'électrode négative dans le contenu dentaire, est une source d'ions OH^- qui, au contact de l'électrode, apparaissent et pénètrent immédiatement dans les canaux. Ces ions OH^- qui sont "bactéricides" ont une vitesse de pénétration cinq fois plus rapide que les ions iodes I^3 , conséquemment une application cinq fois plus courte. (Une à trois minutes, au lieu de cinq à quinze minutes.)

L'action des ions OH^- sur les composés avoisinants constitue une troisième manifestation de l'électrolyse. Les ions OH^- aident au nettoyage des canaux par désintégration des molécules albuminoïdes en les rendant plus simples et solubles; par saponification des acides gras; enfin, par une dissolution des sels calcaires des parois dentinaires et ceci sur une très mince couche de dentine. C'est une véritable ouverture électro-chimique favorisant un meilleur accès. Cependant, nous ne pouvons pas compter exclusivement sur l'action des ions OH^- et nous devons quand même être très soigneux dans le nettoyage et la préparation mécanique des canaux. Nous devons prendre les mêmes précautions que pour toute autre méthode en ce qui concerne l'ouverture, l'élargissement et le nettoyage des canaux, mais l'ionophorèse a cet avantage d'assurer un nettoyage plus complet, spécialement dans le cas des canaux inaccessibles et des canaux accessoires.

Finalement, les ions OH^- , en plus d'être bactéricides, sont "bactériolyseurs", car au lieu de tuer simplement la virulence des micro-organismes, ils déterminent la liquéfaction du contenu microbien du canal. Ceci dépasse l'action antiseptique. En d'autres mots, le contenu du canal ne constitue plus un milieu de culture. (Peut être considéré comme une quatrième action de l'électrolyse.)

Dans l'expérience "in vitro", (en mêlant gélatine, eau, chlorure de sodium, et quelques gouttes de solution alcoolique saturée de phénolphtaléine) les mêmes phénomènes se manifestent que "in vivo" et nous pouvons voir le moment précis où les ions hydroxides arrivent à l'apex par l'apparition d'un point rouge (le phénomène montrant la présence des ions hydroxides). Nous pouvons donc voir le champ périapical exact qu'atteignent les ions hydroxides. S'il y a apparition de glomérules rouges, le long de la racine, ceci révèle l'existence de canaux secondaires ou accessoires. Voici un autre phénomène que nous observons: les ions Na qui viennent de l'apex vers la chambre pulpaire sont hydratés, si bien qu'une chambre pulpaire presque sèche devient progressivement humide durant l'application. Cette électro-osmose se nomme "cataphorèse". L'union de la cataphorèse et de la libération d'hydrogène produit une mousse électrolytique. Cette mousse doit être surveillée et l'excès absorbé par une boulette de coton. Autrement, elle déborderait de la cavité et donnerait une fuite de courant vers la gencive. La cataphorèse et la libération d'hydrogène ont un effet de nettoyage mécanique du canal. Pour cette raison, il ne faut pas forcer l'électrode, ni aller trop loin dans le canal afin d'éviter l'obstruction; autrement, la pression de l'hydrogène produit amènerait un refoulement des débris dans la région périapicale et ceci avant même que cette zone ait été stérilisé par les ions OH. On ne doit pas employer un fil uni comme électrode dans le canal, mais un fil barbelé qui a accès librement dans le canal, afin de laisser de la place pour l'expulsion des débris régurgités. L'introduction de l'électrode négative dans le canal doit être progressive; ainsi la stérilisation ira graduellement de la chambre pulpaire à l'apex, produisant par le fait même un stérilisation progressive.

Dans les canaux où la pénétration n'est possible qu'à l'entrée, l'application du courant ouvrira graduellement le canal à travers les lyses aluminoides. Si le

canal est absolument invisible, on placera une boulette de coton imprégnée de solution NaOH (hydroxide de sodium) à 20% dans la chambre pulpaire, ayant soin d'enlever l'excès de liquide, et l'on mettra l'électrode en contact avec cette boulette. En fin d'application, l'emploi d'une sonde lisse nous fera voir éventuellement l'entrée du canal.

Lorsque la mousse électrolytique (réelle soude caustique) est suffisamment abondante pour remplir le canal, elle produit le nettoyage et la stérilisation de la partie cervicale des canaux. Sinon (ce qui n'a aucune importance pour l'ionophorèse apicale) la partie cervicale des canaux et de la chambre pulpaire restent septiques, et une senteur de gangrène peut y demeurer; ceci cause alors des craintes au praticien qui pense par le fait même avoir raté son travail, tandis qu'en fait toute la zone apicale des canaux est désinfectée. Si l'on faisait un prélèvement dans les canaux, pour fin de culture, il serait positif et ceci confirmerait un échec. Mais ce serait faux, car si nous remplissons les canaux tels qu'ils doivent l'être, la septicité camérale ne risque pas de réinfecter l'apex et la guérison est normale. Cependant cette technique acrobatique, qui consiste à traiter l'apex en négligeant la partie proximale n'est pas recommandable. Alors nous devons en premier lieu, même avant l'application de l'ionophorèse, faire un bon nettoyage mécano-chimique de la chambre pulpaire et des canaux accessibles au moyen d'une solution de soude suivi d'un lavage à l'eau ordinaire. Si le canal est trop étroit pour ce procédé, nous devons dans ce cas ne pas forcer l'électrode trop rapidement jusqu'à la partie inaccessible. Bien au contraire, nous devons placer l'électrode à l'ouverture du canal pour en assurer d'abord la désinfection, et pénétrer graduellement dans le canal, selon la production d'ions OH, selon leur pénétration et selon le nettoyage électro-chimique éventuel du canal. Alors un prélèvement radiculaire serait susceptible de donner une culture négative.

Si, avec une pointe de papier, on introduit un antiseptique dans le canal, on ne possède qu'une vague notion de la quantité de médicament employé. Mais avec l'ionophorèse, c'est avec une précision mathématique que sont déterminés les phénomènes d'électrolyse. De cette manière, l'ampérage peut être déterminé par la quantité d'électricité—appelé coulomb—qui est produite en une seconde en convertissant 1.118 milligramme de sel d'argent en argent métallique par l'électrolyse. Un décicoulomb (1/10 de un coulomb) produit 0.0414 milligramme d'hydroxide de sodium NaOH, ou un centigramme de solution à 4%. Ainsi l'application de 4 décicoulombs est équivalent à une injection de 4 centigrammes de solution d'hydroxide de sodium à 4% ou d'une façon plus concrète 4/5 de goutte (20 gouttes équivalent à 1 cc). Ce dosage de l'électrolyse et de l'ionophorèse ne peut être obtenu que par une mesure exacte des quantités d'électricité appliquées, et ceci est fait par l'appareil appelé: *étégateur*. (Contrôle électro-mécanique.)

La tolérance du patient au courant varie d'une dent à l'autre. La densité du courant électrique détermine les sensations. Si l'on emploie durant quelques secondes (15 à 20) un courant dynamique superposé à l'ionophorèse, on augmente ainsi la tolérance. Les traitements à l'ionophorèse sont définis, quant à la quantité d'administration, et sont certains d'une bonne distribution dans les tissus. Il faut s'assurer naturellement qu'il n'y a pas de diffusion possible du courant au dehors des canaux. Si cela arrive, on peut facilement s'en apercevoir, puisque la diffusion devient irrégulière et trop accélérée pour se limiter au passage dans le canal de la racine.

Permettez-moi d'insister encore sur l'importance de l'emploi d'un fil barbelé pour la diffusion du courant ionique. Si on ne laisse pas suffisamment d'espace autour de l'électrode, il se produira un blocage dans le canal et les débris ne seront pas rejetés au dehors avec l'hydrogène naissant dirigé vers la chambre

pulpaire. Les ions Na et H doivent avoir accès à la chambre pulpaire, tout aussi bien que les lyses de débris organiques.

Cas Speciaux

1. La lésion apicale peut comprendre deux apex: soit deux dents ou deux canaux de la même dent, devant être traités dans la même séance, afin d'obtenir l'effet stérilisant des ions OH.
 2. Un manque de tolérance du courant dès le début, indique que le canal contient encore des débris de pulpe vivante. Le seul procédé en ce cas est de donner l'anesthésie locale ou régionale, d'enlever ce que reste de la pulpe et de profiter de l'anesthésie pour faire l'application du courant.
 3. Dans certaines fistules, on peut observer une décharge fistulaire persistante, qui constitue une source de foyer secondaire. Ce foyer non traité peut réinfecter la zone périapicale avant de guérir. Deux modes de traitements sont recommandés:
 - a) L'ionophorèse et l'ionisation. Une électrode de cuivre au pôle positif, faite d'une broche bien isolée, découverte seulement à son extrémité; cette extrémité est introduite de 1 à 3 millimètres dans la fistule. L'électrode négative est encore dans le canal dentaire; de là s'effectuera la pénétration des ions OH dans le canal. Mais l'électrode de cuivre s'ionisera et émettra des ions de cuivre vert, qui pénétreront secondairement dans la fistule. De cette façon, la fistule est stérilisée dans toute sa longueur et sa cicatrisation est rapide.
 - b) Si le canal est déjà rempli, le cylindre métallique (électrode positive) est tenu dans la main, et une broche unie (électrode négative) est introduite dans la fistule de 1 à 3 millimètres et la pénétration des ions OH dans la fistule ne demande que 2 décicoulombs.
 4. Un instrument est brisé dans le canal. Le plus souvent il s'agit d'un fil barbelé qui laisse un certain passage le long de sa surface barbelée. On peut alors appliquer l'ionophorèse sans précautions particulières. Les ions OH iront le long de l'instrument brisé, la mousse électrolytique refluera dans la chambre pulpaire, et à la faveur de l'alésage électrochimique du canal, dans plusieurs cas, l'extraction du fil sera facilitée.
- Un traitement à l'ionophorèse bien fait doit toujours procéder sans la moindre réaction. Si une réaction se produit, elle est due à un mauvais diagnostic ou à une faute de technique. D'après les patholo-

gistes, nous savons que la pulpe peut se désintégrer de deux façons: la première par *acidose*, et c'est dans ce cas l'infection qui cause le changement du contenu de la chambre pulpaire, normalement organisé, et alcalin, en un contenu désorganisé et acide. Ceci tôt ou tard réagit dans la région péri-dentaire (c'est ce qu'on appelle une "infection vraie"). La seconde façon, c'est par *alcalose*, c'est-à-dire par hyper-alcalinité incompatible avec l'existence de microbes pathogènes. Les affections par alcalose sont plutôt rare, mais on doit les craindre également. L'alcalose, résultat de la dégénérescence basique de la pulpe, donne des symptômes absolument identiques à ceux qui proviennent de l'acidose ou de l'infection, mais elle est amicrobienne. On doit être méfiant quand la pulpe se désintègre spontanément, sans carie apparente ou commençante, ou, plus précisément, quand la désintégration de la pulpe est due à une dégénérescence aseptique de la pulpe. Par exemple, par les micro-traumatismes fréquents et répétés ou par des obturations insuffisamment isolées. Dans ce cas, le traitement acide est de rigueur. Un traitement à l'ionophorèse selon la technique habituelle des ions OH, causerait dans un milieu alcalosé déjà hyper-alcalin, un renforcement fatal de la condition déjà existante. C'est pourquoi, il est d'importance capitale au tout début de donner un traitement acide par un nettoyage chimique à l'acide chlorhydrique dilué d'abord, puis une phorèse d'ions H, permettant la neutralisation de l'alcalose. Le procédé de cette ionophorèse d'ions H est très simple. L'électrolyse du contenu physiologique des canaux peut donner des ions H. Mais deux conditions sont requises: 1—placer l'électrode positive dans la dent; 2—employer une aiguille de platine comme électrode. Par la suite, il y a division du chlorure de sodium et les ions chlore Cl⁻ deviennent atomes au contact de l'électrode positive et donne avec l'eau la formule suivante: $2\text{Cl} + \text{HOH} = 2\text{ClH} + \text{O}$.

Une aiguille de platine est indispensable, car autrement si le fil est fait d'un métal altérable, le chlore désionisé au

contact de l'électrode positive, étant du chlore atomique, peut attaquer le métal de l'électrode et produire un sel de ce métal. Après l'application des ions H, le traitement n'est pas fini. Nous devons attendre d'avoir obtenu l'équilibre acide-base, c'est-à-dire au moins une heure. Une autre application d'ionophorèse, mais cette fois avec les ions OH, est nécessaire, et l'on obtient les résultats les plus intéressants en rappelant dans l'après-midi, pour un traitement aux ions OH, un patient traité aux ions H durant la matinée.

Maintenant les résultats thérapeutiques sont en relation directe du parfait emploi du procédé à l'ionophorèse. Cependant, le remplissage des canaux demeure une phase importante. La substance de remplissage permanent des canaux doit être favorable à l'activité biologique et à la régénération des tissus osseux péri-apicaux. Dans l'application de la technique d'ions OH, il est à conseiller de remplir définitivement le canal après le premier et seul traitement. Nous avons maintenant atteint le moment où nous voulons remplir notre canal. Des pointes de coton stériles sont appliquées pour retirer à l'extérieur la mousse qui a pris place dans le canal.

Radiocalca

L'attention des chercheurs a toujours porté sur la désinfection des tissus péri-apicaux pendant qu'on laissait à la nature le soin de la régénération. Selon les Drs. JOLY et LENFANT, la restauration des lésions osseuses dues aux affections endodontiques est un problème épineux. "*On peut obtenir cette restauration plus rapidement que d'habitude si on donne à l'organisme des aliments susceptibles d'être employés directement et immédiatement. L'emploi d'une pâte endodontique, contenant de l'hydroxide de calcium et du glycogène en proportion judicieuses, permet une accélération marquée de la restauration osseuse en même temps qu'il permet une calcification systématique néo-cémentaire des ouvertures apicales.*" Mais rappelons-nous que l'hydroxide de

calcium est pour la zone périapicale décalcifiée une nourriture complète qui tend à être résorbée et entièrement détruite, si par hasard il n'y a pas d'expansion et si la lésion est considérable. Dans le cas de non-expansion du calcium, nous sommes obligés de renouveler la pâte au bout de dix jours. La RADIOCALEX, matériau expansif, (Dr P. BERNARD) devient une importante réserve alcaline et calcique, et généralement suffisante. Ce qui est important de noter, c'est que le matériel s'hydrate et devient liquide dans les canaux larges, tandis que dans les petits canaux, il est condensé sur les parois, devient plus dense et causera la calcification des tubes dentinaires. Ainsi il est à conseiller dans les canaux larges, quand l'expansion totale est obtenue, d'enlever la pâte encore liquide et de la remplacer par un matériau de remplissage usuel. (gutta percha, oxyde de zinc, ciment, etc.)

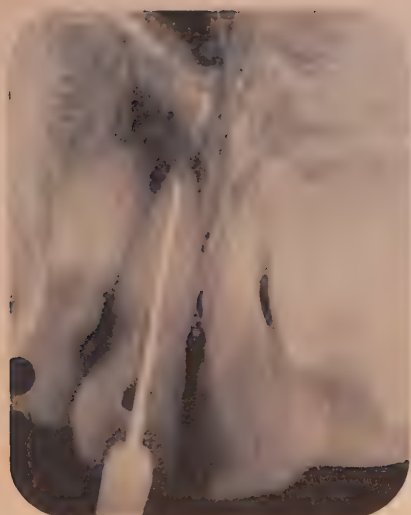
L'oxyde de calcium passe à l'état d'hydroxide de calcium quand il est exposé à l'eau contenue dans le canal. $\text{CaO} + \text{H}_2\text{O} = \text{Ca(OH)}^2$

Comme autre avantage, ce matériau

sert de véhicule au glycogène vers l'apex. Il permet à l'organisme de transformer rapidement la chaux qui lui est fournie en matière minérale osseuse. Le glycogène est un constituant normal de tous les tissus. Au moment même de la calcification, le glycogène se dépose en quantité importante sur le cartilage en voie de devenir de l'os. "Dans le mécanisme de la calcification nous savons déjà qu'il existe deux actions simultanées et très distinctes: l'attraction ou l'affinité et l'isolement des ions Ca et PO^4 (calcium et phosphore) dont l'union assure la formation du phosphate tricalcique fondamental $(\text{PO}^4)^3\text{Ca}^2$." Le plasma sanguin véhicule constamment des ions Ca , et comme l'union des ions Ca et PO^4 exige un état liquide du pH supérieur à 8, il faut donc que le Ca soit sous la forme Ca(OH)^2 . Toute substance calcique, devant être assimilée durant le processus de réossification, doit pouvoir se transformer facilement en Ca(OH)^2 . L'hydroxide de calcium constitue une réserve d'ions OH capable de prolonger l'action de l'ionophorèse et de maintenir dans les tissus



CAS NO 1—Infection chronique datant de deux ans. Résultat contrôlé six semaines après.



CAS NO 2—Infection périapicale avec fistule. Radiographie de contrôle huit semaines après.



CAS NO 3—Granulôme. Fistule. Traitée par ionophorèse et ionisation. Radiographie de contrôle six mois après.

Tous ces cas ont eu au moins trois traitements de diadynamothérapie



CAS NO 4—Canal rempli avec le Radiocallex et gutta-percha.

périapicaux un pH favorable au processus de guérison.

Le Radiocallex contient un élément radiopaque (cristaux d'argent métallique) qui ne participe pas beaucoup à la réaction d'expansion et ne pénètre pas dans les tubes dentinaires. Je voudrais cependant insister sur le fait de fouler des pointes de gutta-percha dans la pâte d'hydroxide de calcium afin d'assurer une union plus entière avec les parois des canaux et donner une radiopacité plus définie pour mieux voir le bourrage parfait du canal.

Diadynamothérapie

Pour compléter le traitement d'ionophorèse (courant continu) dont l'action est essentiellement antiseptique, le Dr Pierre BERNARD a ajouté à son appareil une thérapie diadynamique qui permet de stimuler la trophicité tissulaire. Le courant diadynamique est un courant de synthèse et très particulier dans sa forme. Alors que le courant direct, comme celui qu'emploie l'ionophorèse, n'agit pas sur le métabolisme tissulaire, le courant

sinusoidal (tel qu'employé ici) est le seul capable d'augmenter considérablement l'échange respiratoire des tissus. Les autres courants de basse fréquence, comme le Faradique ou l'Exponentiel, ne peuvent vous apporter les mêmes résultats, à moins d'être appliqués à des intensités douloureuses car *"la longueur des courbes qui en dérivent dans leur zone d'action sont notablement plus courtes que celles des courants sinusoidaux"*.

Comme bases physiques caractéristiques, les courants périodiques de B.F. sont les seuls susceptibles de produire des actions physiodynamiques (sensitive-motrices). Les courants de H.F. sont sans action de cette nature. Les intensités électriques qui déterminent ces manifestations sont comprises entre deux seuils (minima et maxima) qui limitent une zone d'action. Dans son volume intitulé *La Thérapie Diadynamique*, le Dr BERNARD explique qu'au point de vue électrique, c'est *"un courant ondulatoire diphasé dont une phase est modulée en plus ou moins longue période. La modulation en courte-période produit toutes les secondes des variations de qualités des sensations en période diphasée, le patient ressent une trémulation plutôt fuyante, et en période monophasée, l'intensité électrique diminue de moitié environ et cependant la sensation est plus forte, plus saccadée. C'est là une propriété particulière de ce courant qui démontre que ce n'est pas du tout l'intensité qui est efficace, mais la 'forme de courant'."*

Notre but est de recommander son emploi pour accélérer la régénération de la structure osseuse dans la zone apicale traitée. *"Le diadynamique appliqué sur la gencive pendant une ou deux minutes, deux ou trois fois dans les jours qui suivent l'ionophorèse et l'obturation, provoque le réveil physiologique des tissus atones du périapex et stimule successivement la résorption des éléments pathologiques et la régénération osseuse."* On cherchera dans l'application du courant une forte vibration sans que le confort du patient en souffre pour celà. L'inten-

sité devra être limitée entre le seuil de perception et celui de la douleur, sans oublier que la quantité de courant varie avec chaque patient dont la coopération est nécessaire afin de déterminer le meilleur niveau de courant.

Les applications diadynamiques bien réglées provoquent une exaltation très considérable de la trophicité tissulaire et les troubles disparaissent avec une rapidité surprenante. Les résultats sont cependant moins spectaculaires lorsqu'il s'agit de lésions profondes comme les affections périapicales, mais cette thérapie permet d'avoir un contrôle radiologique dans le temps record de un à deux mois au lieu de huit à douze mois pour les cas n'ayant pas subi ces traitements.

La thérapie diadynamique est donc un complémentaire de l'ionophorèse en ac-

célérant la processus de guérison périapicale; mais comme autres indications en odontostomatologie, elle est très spectaculaire dans le traitement immédiat des alvéolites (dry-sockets), de l'arthrite, la névralgie faciale ou le trismus. Elle est une aide précieuse dans le soulagement des "tics douloureux", des entorses et des douleurs rhumatismales. Finalement, c'est un stimulant des tissus dans les atonies gingivales et après les traitements de paradentose.

Pour terminer disons que la thérapeutique que je vous ai exposée ce soir peut se résumer à ceci: un traitement à l'ionophorèse, un bourrage parfait des canaux et finalement un guérison plus rapide par l'eutrophie diadynamique.

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Nouvelles de l'Association

Congrès annuel de l'A.D.C.

La réunion annuelle de l'Association aura lieu à Toronto du 15 au 18 mai inclusivement.

Le Bureau des Gouverneurs se réunira quelques jours avant le Congrès, c'est-à-dire du 11 au 14 mai.

Les détails du Congrès ont paru dans la livraison de mars du Journal.

Tarifs de chemin de fer réduits à l'occasion du Congrès

L'Association canadienne des Passagers a consenti des réductions aux tarifs des chemins de fer pour les dentistes qui se rendront au Congrès annuel, à Toronto. Les réductions s'appliquent pour les membres de l'A.D.C. et leur famille et pour les membres de l'Association des Infirmières et des Assistantes dentaires.

Les dates approuvées pour le voyage d'aller sont les suivantes:

Pour les endroits des lignes de l'ouest — tous les endroits à l'ouest de Fort Williams et Armstrong, Ont.: du 4 au 10 mai, inclusivement.

Pour les endroits des lignes de l'est — Fort Williams et Armstrong et tous les endroits situés à l'est de ces deux endroits, excepté Terre-Neuve: du 7 au 13 mai, inclusivement.
Pour Terre-Neuve: du 4 au 10 mai, inclusivement.

Pour profiter de ces réductions, il faut présenter des certificats d'identification au

moment de l'achat des billets. On peut obtenir ces certificats en écrivant au secrétaire de l'A.D.C., à 234 rue St-Georges, Toronto.

Le Manitoba augmente son octroi à l'A.D.C.

A la dernière assemblée de l'Association dentaire du Manitoba, on a décidé de porter à \$20.00 l'octroi annuel de chaque membre à l'A.D.C.

Décision du Comité des Recherches de l'A.D.C. au sujet des appareils domestiques de fluoration

On a suggéré en certains milieux d'utiliser des appareils domestiques pour fluorer l'eau de consommation. Cette méthode ne peut cependant pas remplacer la fluoration publique de l'eau des aqueducs, telle que préconisée par l'Association dentaire canadienne pour les raisons suivantes:

1) Quand un organisme veille à contrôler cette mesure, on est assuré que la teneur de fluorure est juste et vérifiée régulièrement; dans un domicile, un appareil domestique ne peut être contrôlé aussi efficacement et, par ce fait, un tel appareil peut devenir dangereux.

2) L'emploi d'un appareil domestique ne peut remplacer la fluoration publique à cause des dépenses qu'il entraîne et par le nombre de personnes qu'un service municipal protège.

Le Comité se rend compte des lacunes d'une région où la fluoration de l'eau de l'aqueduc n'existe pas; toutefois, pour maintenant, on ne trouve pas de solution adéquate à ce problème.

La carrière de dentiste

Le Conseil d'Enseignement dentaire de l'A.D.C. vient de préparer un feuillet sur ce sujet à l'intention des étudiants des cours secondaires. Ce feuillet est destiné à susciter de l'intérêt pour la profession de dentiste, donner des renseignements et fournir les sources où on peut puiser de plus amples informations.

De façon à servir les meilleurs intérêts du recrutement au sein de la profession dentaire, il serait bon qu'on répande ce feuillet le plus possible. Les organismes dentaires, les dentistes et tous ceux qui sont intéressés à cette question peuvent en commander au prix d'un dollar, le cent. On doit joindre l'argent aux commandes. On s'adresse à l'Association dentaire canadienne, 234 rue St-Georges, Toronto.

Nouveau film: "La route qui mène à la santé"

La British Columbia Fruits Ltd. vient d'offrir gracieusement à l'Association une pellicule cinématographie sonore et en couleurs (durée: 20 minutes).

On y voit comment un régime alimentaire approprié, le brossage adéquat des dents et l'hygiène de la cavité buccale peuvent prévenir la carie dentaire. Ce film constitue une excellente propagande de santé pour des assistances de profanes, adultes et enfants. On peut l'emprunter en s'adressant au bibliothécaire, secrétariat de l'A.D.C.

L'Alberta, après avoir étudié la question, se prononce en faveur de la fluoruration

Le Conseil des Recherches de la province d'Alberta a approuvé sans ambage la fluoruration de l'eau des aqueducs d'Alberta.

Le président du Conseil, l'honorable Taylor, qui est aussi Ministre de la Voirie, a présenté ce rapport en février dernier, après que le Conseil eut consacré deux ans à étudier la question.

Voici les faits saillants du rapport:

- 1) La fluoruration consiste à ajouter à l'eau des aqueducs des fluorures en quantité suffisante pour diminuer la carie dentaire — et non pas en quantité telle que ceux-ci puissent causer du préjudice à la santé en général.

- 2) Il n'y a que des inconvénients à retarder, en poursuivant des recherches sans fin, l'application de cette mesure qui en est une de santé.

- 3) Cette mesure n'aurait aucun effet nocif sur les produits industriels.

- 4) On devrait commencer la fluoruration aussitôt que les ingénieurs qualifiés des bureaux de santé de la province pourront exercer la surveillance nécessaire.

M. Taylor ajoutait: "Le gouvernement provincial ne se propose pas pour le moment de donner suite au rapport." Le cabinet a

étudié la question. Le rapport dit que des années de recherches ont prouvé que la fluoruration ne fait aucun tort à la santé.

Le Conseil de l'A. A. A. S. approuve la fluoruration

Le Conseil de l'Association américaine pour l'Avancement de la Science a adopté à sa dernière réunion une résolution approuvant sans réserve la fluoruration comme "une mesure pour faire avancer la santé publique dentaire". Auparavant, la section dentaire de l'A. A. A. S. avait endossé cette méthode. Ce Conseil comprend les représentants de chacun des 161 organismes qui forment l'A. A. A. S.

Acquisitions récentes de la bibliothèque

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REDDISH, G. F. ed.: Antiseptics, disinfectants, fungicides, and chemical and physical sterilization. 1954. 841p. illus.

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Nombre d'étudiants en chirurgie dentaire pour 1954-1955

Si on compare le nombre des étudiants en chirurgie dentaire de cette année avec celui de l'an dernier, on se rend compte qu'il est plus élevé cette année, avec 41 élèves en plus. (748 en 1955, 707, en 1954.) Les disponibilités actuelles d'enseignement permettent un maximum de 808 élèves, à supposer qu'il n'y ait pas d'échecs ou de retraits. Il paraît donc improbable que ce chiffre soit jamais atteint.

En 1954, 172 étudiants ont terminé leurs études dans les universités canadiennes; c'est le nombre de plus bas depuis 1948. L'analyse du nombre des élèves actuel révèle qu'on ne peut s'attendre à une augmentation notable du chiffre des diplômés à moins que les écoles dentaires ne puissent recevoir plus d'étudiants.

L'Université de Toronto est la seule au Canada à offrir des cours pour les hygiénistes dentaires. Cette année, 17 étudiants suivent ces cours. L'exiguité des locaux limite forcément le nombre des admissions. Le pays a tellement besoin d'hygiénistes dentaires qu'il faut s'efforcer

d'obtenir un augmentation des facilités d'enseignement en hygiène dentaire.

La proportion des étudiants en rapport avec la population des diverses provinces varie considérablement d'une année à l'autre. L'an dernier, la province du Manitoba avait la plus faible proportion; elle était de 1 étudiant par 44,944 de population. Cette année, la proportion, dans ce cas particulier, s'est quelque peu améliorée; elle est de 1 étudiant par 33,120 de population.

Le tableau VII indique sur une période de plusieurs années comment les écoles dentaires desservent les différentes provinces.

Les renseignements obtenus au sujet du nombre des demandes d'admission aux études ne donnent pas une image exacte de la situation, puisque des étudiants s'adressent à plusieurs écoles. Cependant, ces chiffres indiquent les tendances de l'heure, quoique le nombre des demandes demeure à peu près constant.

TABLEAU 1

Inscription globale des étudiants dans les facultés dentaires du Canada au 2 janvier 1954

Université	1ère année	2e année	3e année	4e année	hommes	femmes	Total
Dalhousie.....	13	10	12	13	46	2	48
McGill.....	37	28	36	37	138	—	138
Montréal.....	55	38	17	20	129	1	130
Toronto.....	75	89	70	79	297	16	313
Alberta.....	31	29	28	31	116	3	119
Total.....	211	194	163	180	726	22	748

TABLEAU 2

Nombre maximum d'étudiants pouvant être acceptés en 1ère année dans les différentes facultés

Dalhousie.....	12
McGill.....	35
Montréal.....	60
Toronto.....	65
Alberta.....	30
Total.....	202

TABLEAU 3

Résumé des inscriptions dans les facultés dentaires du Canada de 1940-1953 (inclusivement)

Ecole	Dalhousie	McGill	Montréal	Toronto	Alberta	Total
1940-1941.....	31	58	104	210	51	454
1941-1942.....	25	61	118	232	49	485
1942-1943.....	25	67	139	270	53	554
1943-1944.....	22	67	154	255	24	522
1944-1945.....	28	51	162	264	34	539
1945-1946.....	27	73	184	180	54	518
1946-1947.....	38	111	188	340	108	785
1947-1948.....	37	127	208	435	115	922
1948-1949.....	41	146	224	478	123	1012
1949-1950.....	48	147	225	478	136	1034
1950-1951.....	48	145	196	380	114	883
1951-1952.....	49	145	140	300	121	755
1952-1953.....	50	141	111	294	123	719
1953-1954.....	50	142	98	299	118	707
1954-1955.....	48	138	130	313	119	748

TABLEAU 4

Nombre total de diplômés durant les années 1940-1953 (inclusivement)

Ecole	'40	'41	'42	'43	'44	'45	'46	'47	'48	'49	'50	'51	'52	'53	'54
Dalhousie.....	12	7	8	11	6	8	0	10	9	6	11	12	12	14	14
McGill.....	13	18	9	26	12	13	5	18	15	34	36	37	36	34	37
Montréal.....	23	14	31	18	37	30	41	36	38	45	42	69	55	20	20
Toronto.....	56	45	40	103	61	58	56	75	24	75	168	152	85	75	69
Alberta.....	13	13	32	8	24	7	0	10	13	20	49	25	27	35	32
Total.....	117	97	120	166	140	116	102	149	99	180	306	295	215	178	172

Pour l'année 1954

hommes

femmes

Dalhousie.....	13	1
McGill.....	37	0
Montréal.....	20	0
Toronto.....	65	4
Alberta.....	31	1
	166	6

TABLEAU 5

Distribution des étudiants par provinces et pays étrangers dans les facultés dentaires du Canada au 1 janvier 1954

Ecole	Terre-Neuve	Ile-du-P.E.	Nouvelle-Ecosse	Nouveau-Brunswick	Québec	Ontario	Manitoba	Saskatchewan	Alberta	Colombie Britannique	Etats-Unis	Hong Kong	Indes Occidentales	Bermudes	Afrique	Europe	Porto Rico	Australie	Angleterre	Total
Dalhousie . . .	10	2	23	8	62	19	5	1	2	2	1	1	1	1				1	48	
McGill	3	2	1	2	4	4	1	2	4	28	6	5	2			1	1		138	
Montréal		1	1	4	106	13	8	24	6	6						5			130	
Toronto	1	2		3	1	275	13	6	29	53	24	1	1		1	4		2	813	
Alberta																		1	119	
Total	14	7	25	17	169	298	25	40	55	34	36	1	7	3	2	10	1	2	2	748

TABLEAU 6

Etudiants supplémentaires

	Dalhousie	McGill	Montréal	Toronto	Alberta	Total
*Etudiants diplômés durant 1954-1955.....	0	0	0	10	0	10
**Etudiants post-scolaires durant 1954-1955.....	0	0	9	11	0	20
***Etudiants passagers durant 1954-1955.....	0	0	53	52	0	105
Hygiénistes aux études durant 1954-1955.....	0	0	0	17	0	17

*L'expression "étudiants diplômés" signifie les dentistes inscrits à l'Université dans l'Ecole pour Diplômés et qui suivent un cours donnant droit à un diplôme.

**L'expression "étudiants post-scolaires" signifie les dentistes inscrits dans une faculté dentaire pour y suivre un cours qui donne droit à un titre ou à un diplôme.

***L'expression "étudiants passagers" signifie les dentistes inscrits dans une faculté dentaire pour y suivre un cours de courte ou de longue durée, ne donnant pas droit à un titre ou un diplôme.

TABLEAU 7

Statistiques au sujet du nombre des étudiants canadiens aux études dans les facultés dentaires du Canada en rapport avec la population de leur province d'origine

Etudiants de	Pourcentage des étudiants	*Proportion des étudiants à la population
Terre-Neuve.....	1.87	1/28,429
Ile-du-Prince-Edouard.....	.94	1/15,000
Nouvelle-Ecosse.....	3.34	1/26,920
Nouveau-Brunswick.....	2.27	1/32,176
Québec.....	22.59	1/25,964
Ontario.....	39.84	1/16,933
Manitoba.....	3.34	1/33,120
Saskatchewan.....	5.35	1/21,950
Alberta.....	7.35	1/18,891
Colombie britannique.....	4.65	1/37,235
Canada.....	91.44	1/22,215

*Les chiffres des populations sont ceux fournis par le Bureau des Statistiques d'Ottawa, pour 1954.

TABLEAU 8

Nombre des demandes d'admission aux études dentaires par des candidats qualifiés

Université	1945 Apps	1946 Apps	1947 Apps	1948 Apps	1949 Apps	1950 Apps	1951 Apps	1952 Apps	1953 Apps	1954 Apps
Alberta.....	26	59	27	44	50	45	37	40	45	31
Toronto.....	251	?	?	410	290	239	228	206	243	187
McGill.....	87	104	190	165	142	124	118	50	50	135
Montréal.....	157	108	137	135	140	112	72	107	93	133
Dalhousie.....	?	?	?	?	?	?	?	25	20	16

Note: Les chiffres contenus dans le tableau ne sont pas des plus précis; ils servent à indiquer les tendances d'année en année. Les facultés ont des normes différentes pour juger des demandes; par conséquent, les chiffres soumis par une faculté peuvent être appréciés différemment dans une autre faculté.

Relevé sur l'économie de l'exercice dentaire

IVe Partie

On trouvera ci-joint la quatrième partie du rapport du relevé sur l'économie de l'exercice dentaire du Canada de 1954. La cinquième et dernière partie traitera des dépenses et du nombre de patients traités, etc.

Les revenus en rapport avec le personnel auxiliaire et le genre de pratique

a) Spécialités

Dans une proportion de 92.9%, ceux qui ont répondu au questionnaire étaient des praticiens généraux, 6.1% des spécialistes et 1% incertains. Du nombre total des spécialistes du Canada, environ 57% ont répondu au questionnaire. Parmi ceux-ci, 31 étaient des orthodontistes, 29 des chirurgiens, 13 des périodontistes et 7 exerçaient d'autres spécialités. Du nombre total des spécialistes canadiens, 47% étaient des orthodontistes, 66% des chirurgiens, 60% des périodontistes et 58% des pédodontistes. Ces pourcentages assez élevés devraient fournir des statistiques assez justes. On trouvera dans le tableau XIV les chiffres se rapportant aux revenus des spécialistes.

Pour les quatre spécialités mentionnées, la moyenne des revenus bruts est 16% plus

élevée que celle des praticiens généraux et la moyenne des revenus nets 27% plus considérable; d'un autre côté, la moyenne des dépenses des spécialistes n'est que de 7% plus élevée que celle des praticiens généraux. Les orthodontistes rapportent les revenus nets les plus considérables et les pédodontistes arrivent en seconde place. Il faut noter que ces deux spécialités ne touchent que les enfants. Les pédodontistes montrent les plus gros revenus bruts et les chirurgiens les revenus bruts les moins élevés, ces derniers ayant les plus grosses dépenses de toutes spécialités.

TABLEAU XIV
Moyenne des revenus des spécialistes—1953

	Moyenne des revenus bruts	Moyenne des revenus nets	Pourcentage des revenus nets en rapport avec revenus bruts
Praticiens généraux.....	14,617	7,541	51.6
Spécialistes			
Chirurgien.....	16,604	7,836	47.2
Orthodontiste.....	20,955	13,759	65.7
Pédodontiste.....	16,445	10,914	66.4
Périodontiste.....	15,744	8,999	57.2
Autres.....	10,698	4,341	40.6

relevé sur l'économie de l'exercice dentaire, A.D.C. '54.

b) Employés dans le cabinet dentaire

Le tableau XV montre les relations qui existent entre la moyenne du nombre des employés du cabinet dentaire et les revenus nets. On voit que le revenu brut augmente en rapport avec le nombre des employés. On voit aussi que les revenus nets augmentent aussi, mais pas proportionnellement au pourcentage des revenus bruts.

TABLEAU XV
Dentistes travaillant pour eux-mêmes
Moyenne des revenus—1953—Nombre des employés

Nombre d'employés	Moyenne des revenus bruts	Moyenne des revenus nets	Pourcentage des revenus nets en rapport avec revenus bruts
	8,570	4,700	54.8
	11,756	7,052	60.0
	14,922	7,719	51.7
	19,364	10,223	52.8
	20,414	10,169	49.8
	25,319	13,199	52.1

relevé sur l'économie de l'exercice dentaire, A.D.C. '54.

Le tableau XVI indique le pourcentage de dentistes en rapport avec l'emploi de personnel auxiliaire. La colonne "Vides" représente ceux qui ont répondu employer des assistants, mais qui n'ont pas indiqué leur province. La colonne "Autres" montre

l'organisation de personnel d'un genre non compris dans la liste indiquée. Comme le nombre de ces "autres" est petit, les dentistes utilisant les services d'hygiénistes ont été classifiés sous cette rubrique. Environ 80.9% des dentistes qui ont répondu au questionnaire ont des employés à leur service.

Le tableau XVII indique le nombre de fauteuils et le nombre d'employés de ceux qui ont répondu au questionnaire, en tenant compte des divers états des revenus. Quoique le dentiste qui utilise un seul fauteuil et qui n'a pas d'assistante ait des dépenses moins élevées, il a cependant un revenu net moindre. En général, le revenu net est en proportion avec le nombre des employés et celui des fauteuils. Cela ne veut pas dire nécessairement qu'un dentiste, en installant des fauteuils supplémentaires et en embauchant plus d'employés augmentera son revenu net. Cependant, ces constatations indiquent que si la demande pour ses services dépasse les possibilités d'un dentiste et celles de son personnel, il devrait augmenter le nombre de ses fauteuils et celui de ses employés pour réaliser un revenu net plus considérable.

La cinquième partie de cette série couvrira une analyse détaillée des dépenses encourues au cours de l'exercice dentaire; elle apparaîtra dans la prochaine livraison du Journal.

TABLEAU XVI
Dentistes travaillant pour eux-mêmes
Pourcentage de ceux qui emploient du personnel et du genre d'employés

	Vides	C.B.	Alta.	Sask.	Man.	Ont.	Qué.	N.-B.	N.-E.	I.P.E.	T.-N.	Autres	Canada
Pas d'employé.....	6.7	8.6	8.5	15.7	13.1	17.5	37.9	16.7	25.0	50.0	10.0	19.0	19.1
Une assistante.....	53.3	58.8	55.2	42.7	48.8	51.3	34.2	50.0	45.0	20.0	10.0	51.7	48.3
Une secrétaire ou une réceptionniste.....	6.7	2.5	4.8	6.8	10.7	4.5	6.8	11.0	16.7	10.0		6.9	5.9
Une assistante et une secrétaire ou une réceptionniste.....		2.5	.6	3.4	7.1	2.7	.8						2.3
Deux assistantes.....	13.3	1.8	4.2	5.6	2.4	1.9	1.1	2.8		10.0		5.2	2.2
Une assistante à temps partiel.....		.6	.6	1.1		1.4	.8						.9
Un technicien et une assistante.....	13.3	2.5				3.3	4.9	2.8	3.3		40.0	1.7	3.0
Autre.....	6.7	22.7	26.1	24.7	17.9	17.4	13.5	16.7	10.0	10.0	40.0	15.5	18.3
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

relevé sur l'économie de l'exercice dentaire A.D.C. '54.

TABLEAU XVII
Dentistes travaillant pour eux-mêmes
Moyenne du revenu 1953—Nombre de fauteuils et d'employés

	Moyenne du revenu brut	Moyenne des depenses	Moyenne du revenu net	Pourcentage du revenu net en rapport avec le revenu brut
1 fauteuil, pas d'employé.....	8,269	3,103	4,599	55.6
1 fauteuil, une secrétaire ou une réceptionniste.....	11,968	4,895	6,670	55.7
1 fauteuil, une assistante.....	11,487	6,534	7,415	51.2
2 fauteuils, pas d'assistant.....	11,605	4,674	5,643	48.6
2 fauteuils, une secrétaire ou réceptionniste.....	14,282	6,316	6,899	48.3
2 fauteuils, une assistante.....	16,034	7,598	8,381	52.3
2 fauteuils, une assistante, une secrétaire ou une réceptionniste.....	23,753	10,964	12,352	52.0
2 fauteuils, deux assistantes.....	19,974	7,910	11,130	55.7
2 fauteuils, un technicien, et une ou deux de ces personnes: assistantes, secrétaires ou réceptionnistes.....	18,669	8,485	10,034	53.7
2 fauteuils, une hygiéniste et une ou deux de ces personnes: assistantes, secrétaires, ou réceptionnistes.....	20,044	10,024	10,020	50.0
3 fauteuils, une assistante.....	15,848	7,272	8,474	53.5
3 fauteuils et deux de ces personnes: assistantes, secrétaires ou réceptionnistes.....				
3 fauteuils, une hygiéniste et une ou deux de ces personnes: assistantes, secrétaires ou réceptionnistes.....				
4 fauteuils, un employé ou plus, autres que des dentistes.....				
4 fauteuils, un dentiste et un employé ou plus.....	49,000	29,000	20,000	40.8

relevé sur l'économie de l'exercice dentaire, A.D.C. '54.

Alimentation et carie dentaire

Les hydrates de carbone

S'il fallait réunir toute la littérature sur ce thème, certainement des dizaines de pages seraient nécessaires pour citer simplement la bibliographie.

Aussi, nous n'insisterons pas sur ce lieu commun, sinon en rappelant les "conseils pratiques" que la presse de l'O.M.S. (mars 1955) donne:

On peut, en se fondant sur des faits bien établis, suggérer plusieurs procédés de lutte contre la carie dentaire:

1. Réduire la consommation des glucides adhésifs et fermentescibles tels les sucres et les farineux, surtout entre les repas. Il faudrait déconseiller l'emploi de sucettes en caoutchouc recouvertes de miel ou de sucre pour les nourrissons et les jeunes enfants. (Pourquoi les sucettes de sucre ou de caramel au bout d'un bâton et dont la composition est souvent plus que douteuse, n'est-elle pas citée? On voit même fréquemment en été, sur les plages, les

adultes se donner des airs intelligents avec à la bouche ces bonbons colorés alors qu'ils font preuve bêtise! (Réd.)

2. Enlever de la surface des dents, les glucides avant qu'ils ne se convertissent en acides. A cet effet, on peut terminer le repas par des aliments fibreux tels que les pommes, permettant un autonettoyage masticatoire; se nettoyer systématiquement les dents aussitôt après les repas. Si le brossage n'est pas possible, il faut au moins se rincer énergiquement la bouche, de préférence dans les dix minutes qui suivent la fin du repas..

Lutter contre l'usage des glucides est fort bien, mais on sait combien l'éducation est difficile. Et puis, il y a un autre problème qui est, nous semble-t-il, mis complètement de côté.

Il faut reconnaître que l'enfant et le vieillard ont un besoin de sucre, qui n'a rien à faire avec la gourmandise et qui correspond à ce besoin qu'éprouve le spor-

tif, quand il mange du sucre pour soutenir un effort prolongé.

Des études ont été faites chez des individus soumis à une alimentation riche en glucides (surtout dans les pays scandinaves et au Japon) (*Schulutko, Hohwi et Hansen*) et les résultats obtenus avec l'épreuve d'hyperglycémie provoquée, montrent combien le sucre joue un rôle important dans la lutte contre la fatigue. Comme le rappelle *Tayean*, l'hypoglycémie qui apparaît après l'effort musculaire et dont on connaît l'action néfaste sur le tissu nerveux, serait même à l'origine de la sensation de fatigue, et responsable d'une acétonémie qui apparaît souvent à ce moment et qui régresse après administration de sucre.

Il y aurait donc lieu de rechercher si tous les glucides ont la même influence sur la carie dentaire, ce dont nous doutons fort. On sait par exemple que le sucre de canne est moins nocif à cet égard que le sucre de betterave. Et puis, il y a les lévuloses et les dextroses qui n'ont pas des actions identiques.

Pourtant, fait paradoxal, durant la guerre où le sucre était fort limité (mais cette limitation ne concernait-elle pas plutôt les sucreries, bonbons chocolatés ou non), malgré l'état de fatigue, de surmenage physique ou moral, on a pu prouver une régression de la carie dentaire, (travaux de *Ross*, etc.)

Peut-être faut-il chercher une compensation à cette déficience en hydrates de carbone dans le développement que prirent les petits jardins qui permirent une consommation de légumes frais (riches en vitamines) et surtout de fruits frais et relativement abondants.

Quoi qu'il en soit, le sujet mériterait d'être approfondi dans ce sens, car vouloir faire campagne contre les sucres sans apporter une compensation serait aller au devant d'un échec.

Nous avons parlé des sucettes et sommes étonnés que, même dans notre profession (*Lancet* 1953, II: 523) des con-

frères (américains) utilisent des abaisselangue en sucre d'orge pour les enfants. Je pense qu'une fois sucé, l'objet ne peut servir pour un autre patient; il est donc donné pour le retour à la maison, ce qui assurera une visite chez le dentiste.

Citons aussi les dattes qui nous sont présentées sur le marché et qui, en général, sont enrobées d'un sirop. Nous avons fait de nombreux essais et avons constaté que si l'on en mangeait beaucoup (une douzaine au moins), il s'en suivait une gingivite, voire des aphtes, et autres perturbations buccales qui ne nous sont jamais arrivées quand nous les mangions dans le pays même. Il y aurait aussi lieu de parler des pâtisseries faites à la maison ou achetées dans certains magasins où les colorants et les parfums synthétiques viennent dissimuler les modes de préparation et où l'élément doux employé n'est pas toujours celui qui conviendrait.

Or il faut convenir que de plus en plus le monde aime sortir, se laisse tromper par des apparences et, en tous cas, consomme beaucoup plus de pâtisseries qu'autrefois. Il serait aisé d'en connaître les raisons. Ne parlons pas des chocolats fondants dont la consommation parfois n'est pas immédiate et dans lesquels un palais non prostitué par notre soi-disant civilisation, discerne un beurre rance.

Il faudrait enfin savoir si certains produits remplaçant les sucres, ne sont pas nuisibles à notre bon état buccal. A ce sujet, citons un fabricant de sirops naturels qui subit un jour une observation de la part d'un client, parce que son sirop de framboises ne gélifiait pas directement sur les puddings, comme celui du concurrent. Une analyse de ce fameux sirop fut faite, où l'on constata que non seulement le parfum était synthétique, mais où la dulcine remplaçait le sucre dans une proportion de 90%. Et après cela, étonnons-nous d'être malades! Empressons-nous de dire que dans le cas cité, le chimiste cantonal intervint pour faire rétablir les normes reconnues.

G.N.

Médecine et Hygiène, 20 fév. 1955

Journal

OF THE CANADIAN DENTAL ASSOCIATION

Progress in lower jaw fracture treatment*

by JOHN GERRIE** D.D.S., M.D., C.M., and
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With the passing of a half century including two major wars it might be of interest to review progress in jaw fracture treatment. There has been a swing away from the ingenious, but difficult, cumbersome and impractical cap splints of the early part of the century to a more direct handling of the bone fragments themselves. These fragments are expediently secured by simple splinting methods either through the medium of occluding teeth or by operative attachment to the bone itself. With a view to assaying this progress and clarifying these changes, a review is made of the last 100 patients in a large metropolitan area presenting with ordinary lower jaw fracture.

The development of the specialty of anaesthesia, of a group of men and women skilled in the application of their art,

and in their hands of new drugs, materials and methods, has contributed a great chapter in the treatment of mouth injuries. There has been progress from the choking open ether of thirty years ago to the smooth pentothal-cyclopropane routine of today. It is now possible, and even usual, to complete the fracture fixation—the positive fixation of one jaw to the other—under intratracheal anaesthesia administered by intranasal route, and with the patient returned to complete consciousness and a state of cooperation, within a few moments after the operative procedures have been finished.

The antibiotics too, have been a great help. Their use has taken away our fear of a direct approach to the bone. We are no longer apprehensive of serious complications and approach the mandibular bone itself, either through the mouth or extra-orally, with splints and procedures that would have, in the pre-antibiotic days, been considered heretical.

New materials—stainless steel, acrylics and tantalum—new principles and methods—double pinning, internal wire fixa-

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tion, etc., have all added to this panorama of progress.

AETIOLOGY

The cause of jaw fracture has changed little, both in war and in peace. The trench-machine gun warfare of the first war produced more shattering jaw fractures with loss of substance. This gave scope to the excellent work of Chubb ⁽⁵⁾ and ⁽⁶⁾, and a series of bone graft operations which has not since been equalled. It also gave scope to much of the extensive face reconstruction work of Gillies, Kilner, Risdon and others ⁽⁸⁾. The last war with its movement and mechanization saw less of this face type of injury, but what there was, and the trend of the times brought out some interesting advances in bone grafting as exploited by Mowlen ⁽¹⁷⁾ in which the "chip" cancellous bone graft began to replace the older cortical grafts of Chubb.

In civilian life, the aetiology of jaw fractures has not changed greatly over the years. Fights and fracas with an alcoholic background still bring most jaw injuries to our hospitals. There is probably a greater tinge of industrialism and mechanization, to wit, the front seat or guest passenger injury so common in today's automobile accidents.

Among the presently considered 100 patients, 85 were males and 15 females. The youngest patient was 7 and the eldest 74. The mean age was 31.16 years. Classifying the patients into ten year age groups the results were as follows:

0 to 9 years	1
10 to 19 years	12
20 to 29 years	44
30 to 39 years	20
40 to 49 years	15
50 to 59 years	5
60 to 69 years	2
70 years up	1
	100

They were further categorized as to causation into:

(1) Fights including all brawls and attacks	42
(2) Automotive accidents, (14 automobile, 2 motorcycle and 2 streetcar)	18
(3) Sports (Soccer 1, Football 3, Hockey 3, Golf 1, Baseball 1)	9
(4) Industrial accidents	11

(5) Falls	18
(6) Miscellaneous (aeroplane crash 1, gunshot accident 1)	2
	100

There were 60 single and 40 multiple fractures. Of the latter group 38 were double and 2 were triple giving a total of 142 actual bone breaks in the 100 patients. These were further classified as to anatomical sites:

(1) Right molar-angle region	26	
Left molar-angle region	34	
Total molar angle region		60 or 42%
(2) Right bicuspid or mental foramen region	17	
Left bicuspid or mental foramen region	8	
Total mental foramen region		25 or 18%
(3) Symphysis region	12	
		12 or 8.5%
(4) Right ramus	2	
Left ramus	3	
Total ramus fractures		5 or 3.5%
(5) Right condyle neck	16	
Left condyle neck	23	
Total condyle neck fractures		39 or 27.5%
(6) Coronoid Process	1	
		1 or 0.5%
TOTALS	142	142

Nothing of interest can be deduced from this right and left side frequency unless the preponderance of left molar-angle region fractures indicates a greater frequency of blows with the right fist to the left side of the face. This is the fracture most commonly resulting from a fight.

Ninety four of these hundred patients were hospitalized for varying periods of their treatment and the other six were handled as out-patients. The details of their treatment and the indications and reasoning behind the various methods used are further analyzed.

THE INTERMAXILLARY WIRE TECHNIQUES

The intermaxillary wire techniques continue to be the "sine quae non" of treatment, the method held up to our students to be used wherever possible. It may be a cross-wire technique as introduced originally by Gilmer ⁽⁹⁾ or its more modern counterpart of eyelet wiring (Fig. 1) as introduced by Lt. Graham, U.S.A., to a Vermont State Dental Society Meeting at Burlington in May, 1916 ⁽²⁾ and popularized by Ivy and Curtis ⁽¹²⁾ or one of the several continuous loop methods brought

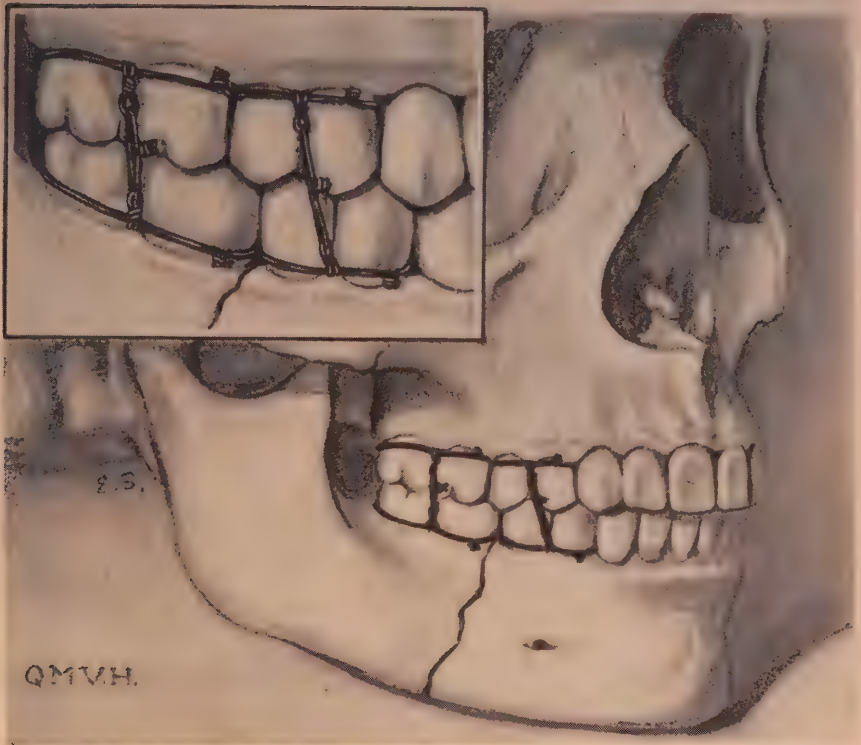


FIG. 1—Eyelet Wire Fixation. Similar units are placed on the same teeth of the opposite side of the arch and on some of the anterior teeth if necessary.

out during the last war. These are the simple, quick, accurate, straightforward methods of bringing a broken lower jaw into correct and accurate occlusion with its upper jaw splint. It is "THE" method for treatment of simple fractures through the tooth bearing area where a fair, occludable complement of teeth are present. It can be done with any kind of wire all the way from hay or florists' wire to an expensive gold or tantalum wire. The older brass or copper wires have been replaced in most places by stainless steel which has a better tensile strength and less tendency to loosen or break than had the older copper or brass wires. One

simply asks in the operating room or dispensary for a 22 or 24 gauge wire spool which is in standard supply, and proceeds to apply his own loops by whatever method seems indicated. In our series, this type of splinting was used in 34 cases. It could have been used in many more but advantage was taken of the expediency of the arches.

THE ARCH BAR METHODS OF INTERMAXILLARY FIXATION

The arch bars (Fig. 2) are great old stand-bys and in clinics where many fractured jaws are being treated one tends to use the arches from a point of

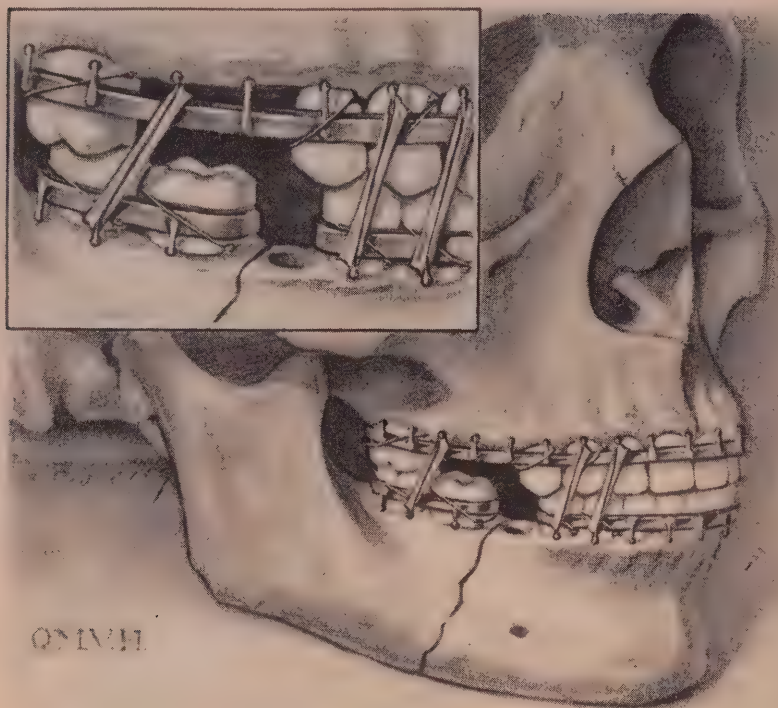


FIG. 2—Arch Bar Fixation.

expediency where they often replace the above wiring techniques. They are like a pre-fabricated house, they can be placed in position quickly and do a good job. Their expense is a bit bothersome. They were originally intended for placement on arches with a poor complement of teeth, to bridge the gaps where one could place the direct wires only with considerable difficulty if at all.

The name of Winter⁽²⁴⁾ stands out and the Winter arch is so handy with its malleable bar, so easy to apply and the numerous knobs to attach either elastics or wires. The Jelenko arch is also good, a little stiffer, more resilient and more difficult to apply, the rounded wire loops get in the way a little less. When many

cases are being handled, one grumbles about their expense and wonders if this type of wire could not be made in bulk rolls the desired length to be cut off as needed, rather than provided in packaged, single case splints with all the necessary wire, ligatures, elastics, etc. Certainly the latter are handy to have in the instrument cabinet. They are neatly, nicely done up and so useful to the surgeon dentist or operating room where only an occasional case is done. In our series, these arches have been used as the only method in 23 cases and in combination with direct reduction or double pinning in 11 cases.

While on the subject, credit must be given to the Risdon Arch,⁽²⁵⁾ Risdon conceived the idea of extending a wire cable

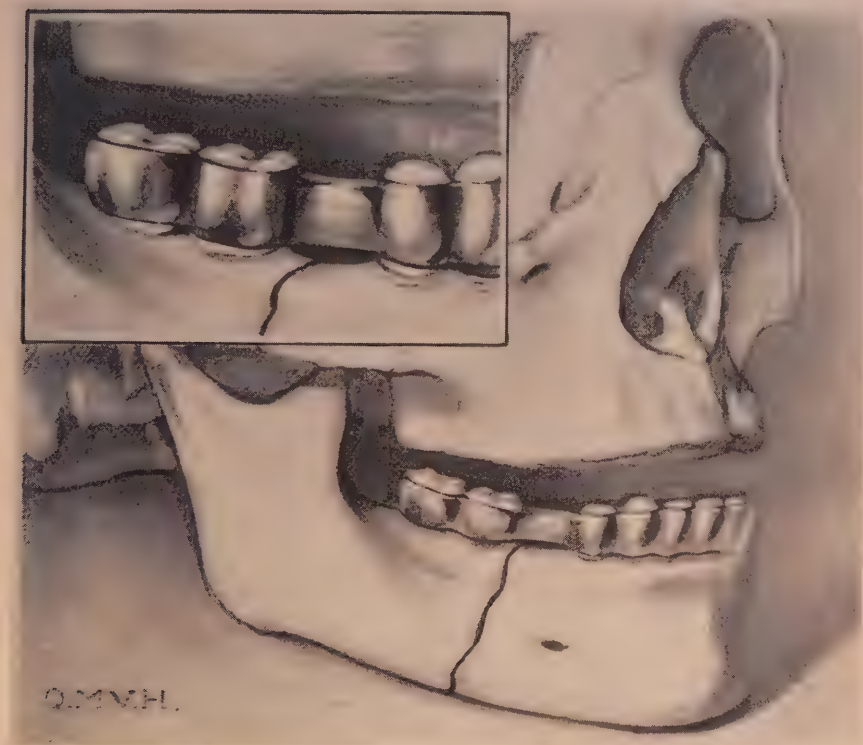


FIG. 3—Cap Splint Fixation.

from molar to molar region. This method is often very useable, handy when one of the other arches is not available, and can be quickly and inexpensively applied. We have found it occasionally useful in a lower jaw fracture with some distraction at the symphysis—the lower Risdon arch just allows the necessary pressure for tucking the lower fragments together. It has been used in our series on one patient.

CAP SPLINTS

The period under review has seen the decline of the cap splint (Fig. 3). Its complicated nature, the bother of taking impressions and making casts, the uncertainty of its correct application and the difficulty of its removal have made its

decline and disappearance most welcome. Certainly in the first war it had its field day when one or two teeth on one side of the arch would be rigidly attached to similar counterparts on the other side by a long, rigid metal bar all nicely polished and soldered together. The whole expensive beautifully engineered and constructed appliance was then cemented into position only to tarnish and teeter on failing abutments, the surgeon hoping it would stay in position long enough to complete its function.

The construction of such splints implies the presence of an organized and enthusiastic prosthodontic department or the cooperation of a similarly enthusiastic and able prosthodontist. It has been our

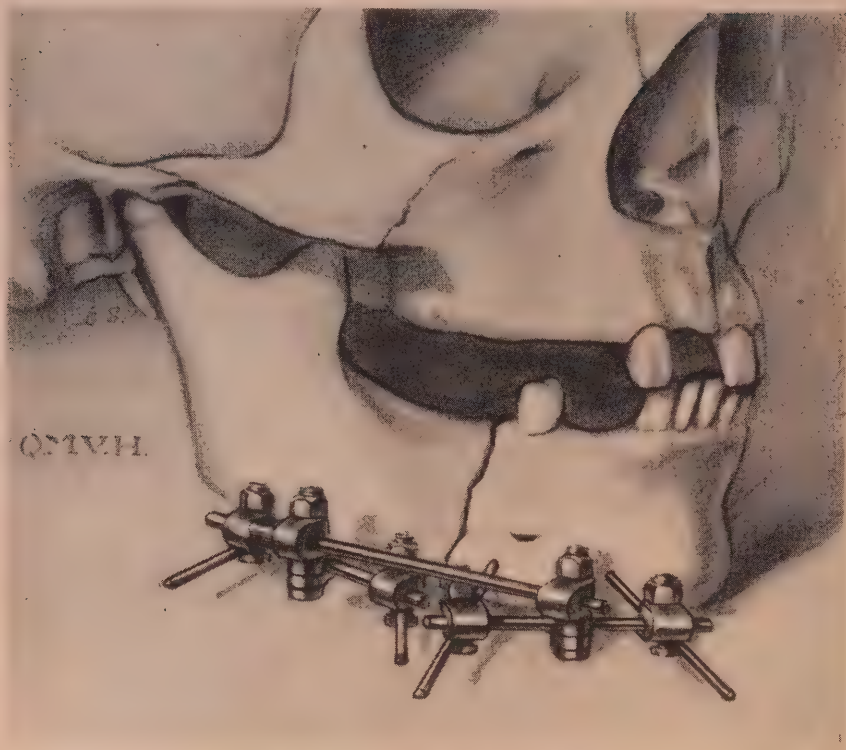


FIG. 4—Double Pin Splinting.

experience that this enthusiasm, if ever present, soon wanes and the time lag before a constructed splint is ready becomes too long.

At the beginning of the past war the use of the acrylics and the new colloid impression materials made one wonder if there would not be a return to the use of this type of fixation. The Stout button splint⁽¹⁵⁾, an ingenious and simple thing seemed to further indicate this trend, but it has gone the way of its predecessors and cap splints are no easier to obtain today than they were twenty years ago.

In the present series no cap splints were used.

DOUBLE PIN FIXATION

Double pin fixation (Fig. 4) implies the method used so successfully in animals by Stader⁽²²⁾, popularized in orthopaedics by Roger Anderson⁽¹⁾ and first applied to jaw surgery by Converse and Waknitz⁽⁷⁾. Following its introduction in 1940, it had an enthusiastic reception both overseas and on this continent. There was considerable apprehension among most oral surgeons that it would be overapplied.

The actual splint, in principle, consisted of two pins, inserted into and through each fragment of the mandible at a converging angle. They were fixed at this angle at a point external to their skin insertion so that each fragment was con-

trolled by its double pin unit. Each double pin unit was then assembled and fixed by a master tie bar.

The surgical and dental instrument markets were soon flooded by a number of gadget-like appliances for holding the pins, pins of different construction, length and markings and different drills for pin insertion. The reception, at first enthusiastic, soon became mixed and in some quarters proceeded to condemnation. Complaints of pin loosening and pin infection were soon heard from Britain and most vociferously from South Africa. The cry of different electrical potentials was also raised. One wonders if this were not due to the insertion of unthreaded pins with the to and fro motion of the Archimedian Drill, which would burnish a bone hole and allow them to drop out.

The method has now simmered down and we feel appears in a fairly proper perspective. We have used it continuously, since its introduction, at first with thin, unthreaded, bi-bevelled pins, crossed before entering the skin; these did loosen and barely held the jaw for its period of fixation.

It is used by the authors less than previously. We feel it has a definite place, is another method of treatment well-indicated in selected cases. The crux of the situation is the pin, tri-bevelled, with a rather open screw thread. This pin is actually a screw, and is "screwed" through the bone until the point passes well through the inner cortex. It traverses the bone much as a wood screw does a soft pine board, the operator being conscious of a different "feel" as the pin passes into and through the cortices. At first hand drills of the awl type were used but soon gave place to the ratchet type. Electric drills are too fast and uncontrollable. The actual assembly apparatus doesn't matter much as long as it is not too bulky, with universal joints and quickly applicable.

Pins so inserted have stayed in position in our series as long as 3 months without loosening. They are usually removed between the 21st and 28th days. There have

been no infections and the patients are comfortable, ambulatory and often discharged from hospital on their second or third day. They seem to be proud of the appliance and have no objection to the amount of "hardware" or the length of time it is kept in position. The pins are removed, without anaesthesia by a gentle, well-controlled, unscrewing movement without more than momentary pain at the first turn of the drill.

The method is "Blind." It is not as accurate as open reduction, but we feel it has a very definite and useful place. It is most useful in handling multiple fragments of the edentulous, aged patient when pin units can be put in the major fragments and these assembled to give continuity to the mandible. It is also very useful in children with care being exercised to keep the pins well to the lower border of the mandible. In the present series it was applied 12 times or in 12% of our cases. Four of these required 3 pin units and eight of them two pin units. We feel that it is indicated to secure any edentulous fragment that needs fixation and may be used as an alternative to open reduction.

OPEN REDUCTION

Open reduction (Fig. 5), a method that used to be avoided, has become increasingly helpful in handling problem fragments. This implies a surgical exposure of the bone ends at the fracture site, reduction and fixation of the ends usually through the medium of stainless steel wire loops passed through drill holes, ligatured tightly and left permanently in position. Bone screws and plates (Fig. 6) have been used and advocated^(4, 14, 16), but the authors have only seen them to condemn them. They are too large a piece of metal of questionable mechanics requiring long incision through the facial nerve area. The principle of open reduction and splinting is merely to tack the bone ends together and prevent shift of recalcitrant fragments. It is not a mechanical issue, to have and to hold, against

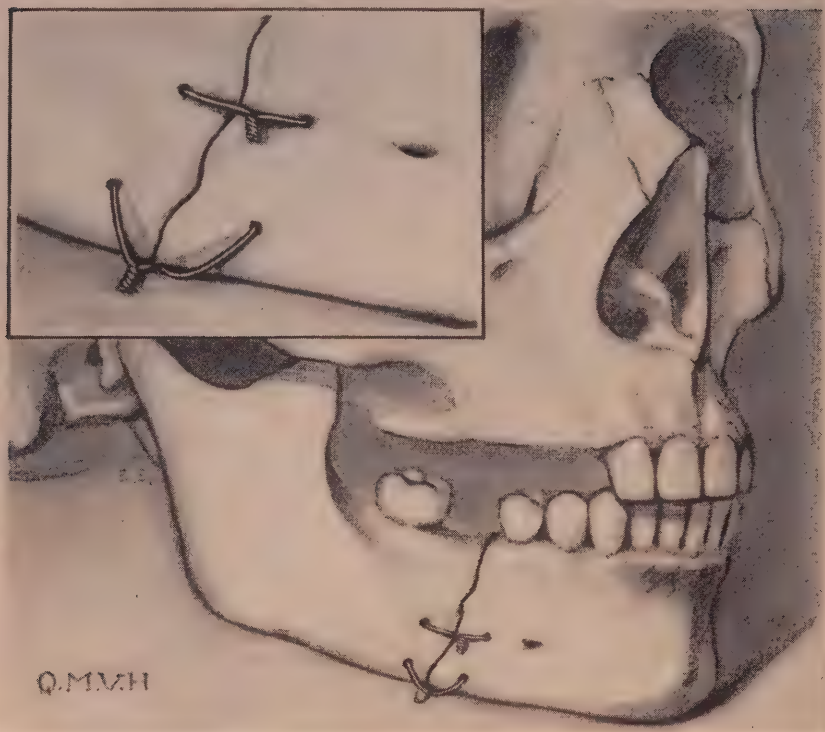


FIG. 5—Open reduction and direct wire fixation. Note the wire sling in a figure of eight manner through the lower drill holes after the method of Gordon.

stresses and strains, and often must be supplemented, or should be supplemented, wherever possible by the dental methods of fixation. It is most useful in the slice fractures of the body of the edentulous or partially edentulous mandible that have been out of position for several days, or the ramus fractures or condyle fractures that require fixation of some sort.

The incision is in the facial nerve area and even though made a finger's breadth below the mandible, aberrant filaments may be encountered and actual facial paresis result. It is at least disturbing to see a depressed mouth corner and to wonder whether the nerve has actually been

severed or the weakness due to trauma of the operation.

Holes are drilled, preferably two on either side of the fracture line and the ligatures placed with 22 or 24 gauge stainless steel wire. Two straight cross ligatures are usually placed although a figure of eight may be used. Gordon⁽¹⁰⁾ has shown a useful method of making a figure of eight sling, using only one pair of drill holes, the wires crossing underneath the fracture site and forming a sling to hold it up.

It is often a toss-up whether to use open reduction or double pinning. The present series shows the method was used in 32

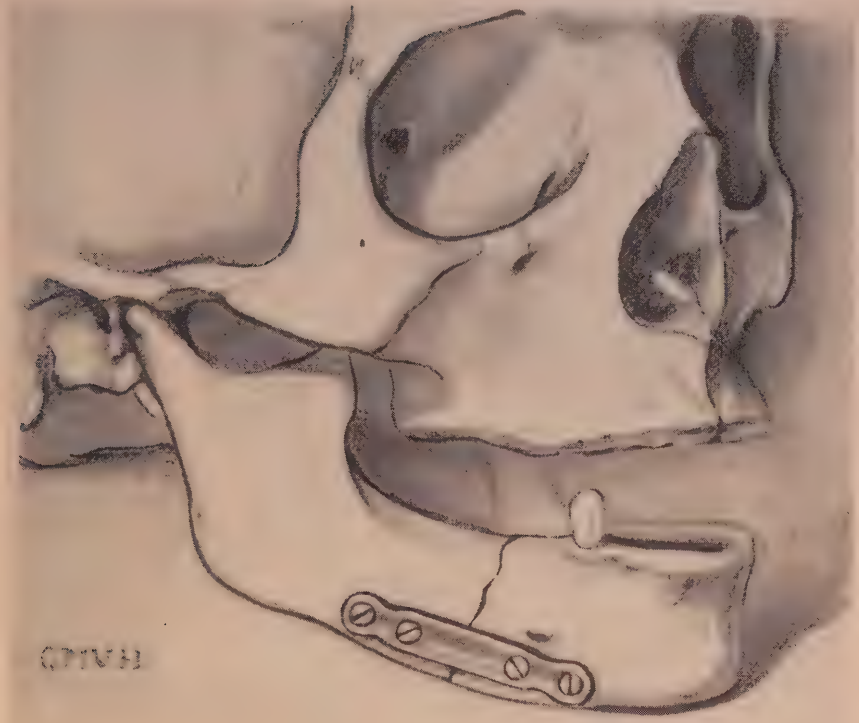


FIG. 6—Bone plate fixation, a method not advocated by the authors.

or 32% of our routine fracture cases. In 16 of these it was used in combination with dental fixation and in 16 it was used alone. The wires are well tolerated and in only one case was the subsequent removal of a wire necessary.

INTERNAL WIRE FIXATION

The direct medullary pinning of fractured jaws (Fig. 7) was introduced by Ipsen⁽¹¹⁾ to the Scandinavian Association of Surgeons in 1933 when 25 cases, so-treated, were reported. It has been further reported upon by Brown and McDowell⁽¹²⁾ and Pincock⁽¹³⁾. In general and orthopaedic surgery the method has been used on the sternum and clavicle where it seems

well indicated and in some of the long bones where its use causes more controversy. We have not cared for the method in principle and prefer the double pin method which gives a possibility of secondary adjustment. No internal wires have been placed in the present series.

CLAMP SPLIT METHODS

Metal clamps to grasp the lower border of the edentulous mandible have been advocated by Penn and Brown⁽¹⁸⁾ and Pohl⁽²⁰⁾. Their application seems more difficult and uncertain than the double pin methods and they have been given no place in our repertoire.

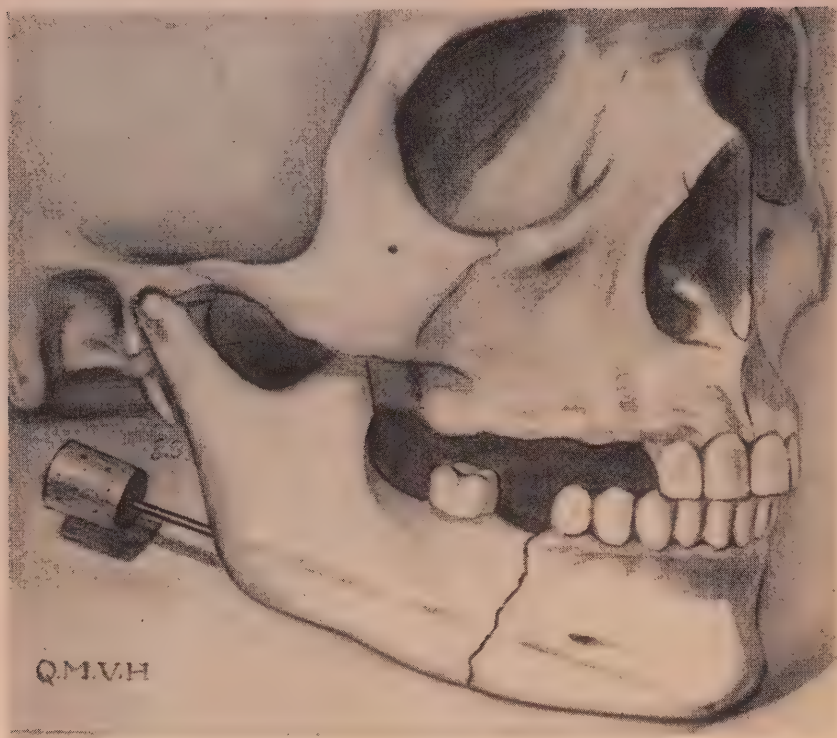


FIG. 7—Internal or Medullary wire fixation.

CIRCUMFERENTIAL WIRING

Circumferential wiring of the edentulous mandible (Fig. 8) over a lower denture although it has been used only once in the present series, is a useful and well-indicated method. The fracture must be well in the denture bearing area and the denture available. Then all that is necessary are three stainless steel wire sutures, threaded with a long straight surgical needle at each end. These are passed through a skin nick below the mandible, one needle labial or buccal and the other lingual to the mandible, the wire brought up with a sawing motion to let it in against the lower border of the mandible and the two ends twisted over the top of

the denture. Patients have little discomfort wearing their denture so for three weeks and the method is remarkably accurate in certain fractures. Slice fractures, fractures with displacement and old fractures with contusion and swelling of the buccal tissues contraindicate its use.

FRACTURES OF THE CONDYLE NECK

We rarely approach the condyle neck surgically and are content to let the matter rest where it stood following the 1926-29 controversy^(12, 13). The experts at this time concluded that the vast majority of this type of fracture did exceptionally well if the teeth were just retained in occlusion for a period of ten days to three

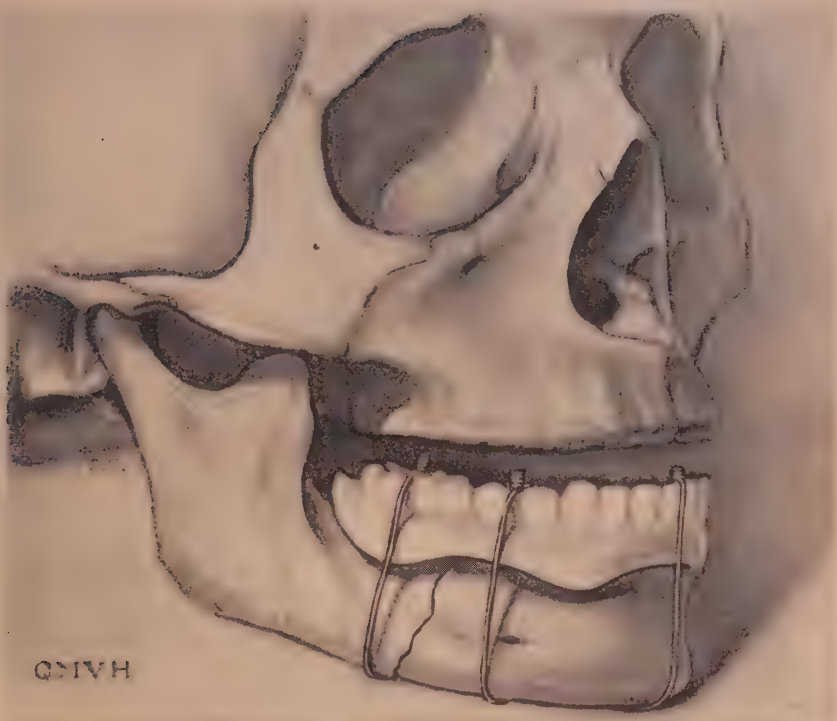


FIG. 8—Circumferential wiring over the patient's denture. Additional wires are placed at the symphysis and opposite molar regions.

weeks. Recently the question has been raised again and it has been suggested that all or most condyle necks should be approached and fixed surgically⁽²⁸⁾. It is hard to subscribe to this reasoning advocating a difficult operation through a facial nerve area for a questionable result. We have had to approach several condyle necks surgically but these have only been those involved in bilateral fracture where the condyle neck was fractured and displaced in an outward direction and control could not be obtained by other methods alone. In these cases, the condyle neck was exposed, tacked with a single wire ligature which seemed to suffice and permit the

other method of fixation to keep the rest of the jaw in its desired position.

TEETH IN THE LINE OF FRACTURE

Teeth in the line of fracture have long been a teaching bogey. From the stand of Risdon, that all teeth so placed should be removed, the trend has been to extreme conservatism. Antibiotics make complications much less likely to ensue and if they do ensue, to render them controllable. Now any tooth that might possibly be used in fixation or whose removal might cause undue traumatism, is left for further consideration. This also applies to cysts or odontomes lying in the fracture site. In one of the present cases

where a decision was made and executed to remove an odontome at the time of fracture fixation a simple, straightforward fracture was converted into a difficult one and our feeling was that the original injury would have resolved nicely about the odontome which could have been removed more advantageously at a later date. This is particularly true about complete or partial third molar impactions in the fracture line. Our policy is to remove only anything that can be lifted out with the fingers.

CONCLUSIONS

- 1. Experience with 100 consecutive jaw fracture cases, in a large metropolitan area, are reviewed with particular reference to changes in treatment principles accruing over the past few years.
- 2. The antibiotics, anaesthesia advances and newer materials have been helpful.
- 3. There has been a trend away from

the older cap splint principles to a more direct fixation of jaw fragments by oral methods, by double pinning or by open reduction with direct surgical approach.

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ERRATUM

Table II, page 152, March issue, should read as follows:

TABLE II

An evaluation of the efficiency of both the method and the experimental design in control of distance from the base of cavity to the pulp.

Method of Assigning Cavity to Control of Experimental Group	Standard Deviation of Differences	
	Formula	Observed Value (microns)
Plan A. Random allotment of one side of each animal as control and the other as experimental	$\sqrt{\frac{s^2}{l} + \frac{s^2}{r} - \frac{2r's's}{lr}}$	96
Plan B. Random allotment of animals—treating both sides always the same	$\sqrt{\frac{s^2}{l} + \frac{s^2}{r} + \frac{2r's's}{lr}}$	132
Plan C. Random allotment of single preparations	$\sqrt{2\left(\frac{w_1 s^2 + w_2 s^2}{w_1 + w_2}\right)^*}$	111

*Weighted average of variances from left sides and right sides.

The state of dentistry in Alberta*

by DR. JAMES ZIMMERMAN **

Dental caries is a crippling disease in the formative age of the child with its effect on growth, metabolism and physical and mental development.

The great aim of our profession is the control of that disease. It is a well-known fact that 95% of the civilized world is afflicted with dental caries.

The control of that disease is our obligation to our individual communities and to our nation. The greatest progress can be achieved in that control by putting particular emphasis on preventive dentistry for children. By bringing up a generation with good oral health, we might begin to close the gap between current dental needs and the dental manpower available for the task.

Before that is achieved we are also confronted with the prevention and control of dental diseases among adults.

The two objects must be carried out simultaneously; our programme to achieve dental health must be based on:

(1) *Prevention of Dental Diseases through the application of effective preventive techniques: diet, oral cleanliness, fluoridation.*

Our Government in Alberta appointed a special committee to study the whole problem of fluoridation. I understand that this committee made its report to the Research Council of Alberta. No doubt, our Government will in due course announce the findings of the Research Council. In the meantime the Alberta Dental Association is fully in accord with the resolution of the Canadian Dental Association of December 23, 1953.

"That the policy of the C.D.A. on the subject of fluoridation of communal water supplies is to study *all* scientific reports and make available factual information at all times. This association

strongly recommends the fluoridation of water supplies, but does not undertake to induce individual communities to adopt the procedure."

If one were to consider the press as an expression of public opinion it is interesting to note an editorial that appeared in the *Edmonton Journal* on November 3, 1953.

"To the credit of the dentists, it may be noted that, once convinced by careful study of the merits of fluoridation for the prevention of tooth decay in children, they have not hesitated to endorse and to urge it, although its widespread use is certain to reduce the demand for their services. Their profession is exhibiting an enlightened sense of responsibility for the public welfare."

Fluoridation of communal waters is meeting with the same opposition as other health measures have met, such as opposition to vaccination for small-pox, pasteurization of milk and chlorination of water.

The battle for pasteurization of milk was particularly vicious. Even the *Lancet* (Sept. 1936) reports "devastating results of feeding pasteurized milk to rats; not only impaired growth and vitality and loss of hair, but sterility too. It killed them off."

In the Canadian Forum of June 1942, R. E. K. Pemberton reports "pasteurization causes various kinds of deficiency, often leading to fatal results. Some of them show a cumulative deficiency, increasing from one generation to another, until the victims finally die off."

Compare these statements with the veiled linking of the deaths of Robert Taft and Judge Vinson of the Supreme Court of U.S.A. to drinking fluoridated water in the City of Washington, D.C.

Pasteurization of milk has eliminated several forms of Tuberculosis (bones, glands, digestive organs), undulant fever

*Presented before a meeting of The Edmonton and District Dental Society, December 7, 1954

**President—The Alberta Dental Association

and has checked epidemic outbreaks of diphtheria and scarlet fever.

Chlorination of communal water supplies has stamped out the prevalence of typhoid.

There has been a great deal of loose talk regarding cumulative effect of fluorine taken into the body. According to the statement by Dr. Gordon Nikiforuk, Associate Professor of Paedodontics, University of Toronto, "If the body did store up all the fluorine taken in at a concentration of one part in a million of water there would be no detectable systemic effect in 65 years. In 600 years there might be enough stored up to show faint suspicions of mild osteosclerosis."

To use a colloquial expression, "Who should live so long."

Every responsible national health agency in the United States, is in favour of the fluoridation programme. These organizations include the American Medical Association, The United States Public Health Service, the American Academy of Pediatrics, the Association of State and Territorial Health Officers, the American Public Health Association, the Commission on Chronic Illness, and the National Research Council, to name a few. All corresponding Canadian organizations have fully endorsed fluoridation.

A 32-page report by Dr. H. K. Brown, chief of the Department's dental health division, said there has been a statistically significant and progressive decrease in dental caries among Brantford children.

The drop in caries in the 1948-1954 period was about 69 per cent in the 6-8 years age group, 44 per cent in the 9-11 group and 36 per cent in the 12-14 group.

Mechanical fluoridation in Brantford was started for the first time in Canada in June 1945. Since then, a concentration of one to 1.2 parts of fluoride per million has been maintained continuously in the water supply, compared with a natural concentration of about 1.6 parts per million in Stratford.

Assertions have been made regarding

the death rates for the five leading causes in the communities with fluoride in their water supplies. Let us see how this stands up under scrutiny of scientific investigation.

In the study by Dr. Thomas L. Hagen, chief of the Division of Dental Public Health of the U.S. Public Health Service, 32 communities with fluoride bearing water were paired with 32 fluoride-deficient communities for comparison of the number of deaths from heart disease, cancer, intra-cranial lesions, nephritis and cirrhosis of the liver. The results reported were:

Cause of Death	Fluoride city per (100,000)	Non fluoride city per (100,000)
Heart Disease	354.8	357.4
Cancer	135.4	139.1
Intra-cranial lesions	111.5	104.8
Nephritis	21.9	26.7
Cirrhosis of the liver	6.6	8.2

In the investigation on Fluoridation the Health League of Canada sent out a questionnaire to every department of Preventive Medicine of each University in North America. Three questions were asked:

1. What is your opinion of the value of fluoridation in reducing the incidence of dental caries?
2. What is your opinion as to whether there is any evidence of fluoridation being likely to do any damage to the human organism if used in water supplies, as recommended by the United States Public Health Service and other organizations?
3. What other opinions do you have in connection with fluoridation?

The project was in a sense a "flyer". Nobody could guess what the outcome would be; both endorsement and opposition were to be expected.

It is significant that not a single department head expressed himself in opposition to fluoridation. Out of 92 questioned, 16 did not reply, 7 pleaded insufficient knowledge of the subject, and 69 gave it full endorsement, offering reasons for their opinions.

This report was presented to and ac-

cepted by the Federation of Mayors and Municipalities.

The Mayors and representatives of municipalities, having obtained scientific information from the most creditable sources on the continent, returned to their individual communities and there they are faced with a minority group who have engendered a fear complex into the issue of a health programme, causing a cleavage and a possible deferment of the means that would bring the nation into a better state of health.

May I quote from the *Winnipeg Free Press* of August 16th under "Referendum Unnecessary". "Fluoridation clearly does not warrant a referendum. It raises no new issue of principle; the arguments are all ones resting on medical authority, there is no political or business issue of the kind in which every man's opinion is nearly as good as his neighbour's, no great expense is involved. If fluoridation is a matter to be put to referendum, almost every question before Council should be subject to a similar vote and municipal government would be reduced to absurdity.

"City Council, in short, should make up its own mind about fluoridation. The idea of a referendum is misconceived and should be set aside without hesitation."

U.S. Army has decided to install fluoridation facilities for the water supply in the army posts. No referendum was taken.

Was chlorination of water or pasteurization of milk put to a referendum? These were accepted on the strength of scientific evidence. There is not a single argument against fluoridation that will stand the scrutiny of scientific investigation.

(2) *Control of dental diseases by making dental treatment and dental health education available to every child.*

The best approach to the dental problem is through the younger age group of population. We have instituted dental

health week in order to provide a programme of dental health education not only for the child but also for the parent. Dental health can be attained only by the cooperation within the home-circle.

Thousands of pamphlets, circulars and posters were distributed through the schools. From information we have been able to obtain in our own offices, the parents have taken particular interest in reading all the literature that was distributed.

We are indebted to the Department of Health, and the Department of Education of our Province for their kind cooperation and the assistance rendered to us with printed material.

We are particularly indebted to Dr. L. K. Brooks, our Provincial chairman of Dental Health Week, and to his district chairmen who have done an excellent job in inaugurating Dental Health Week in Alberta. Dr. K. Burnham, of Edmonton, our new provincial chairman, has perfected his organization of Dental Health Week. A successful campaign is in store for us.

High commendation was given the action of the Alberta Dental Health Week at the meeting of the Canadian Dental Association and encouragement was voiced to all other Provinces to do likewise.

The City of Calgary is to be congratulated for taking a leading role in making dental treatment and dental health education available to its citizens.

As I remember, in the very first week as your president, I received a letter from the Medical Officer of Health of the City of Calgary asking our cooperation in the reorganization of the dental clinic and in finding a dental director for the Calgary Dental School clinic, a man who would possess a degree in Dental Public Health.

After corresponding with Dr. Gullett and the dean of the Dental Faculty of the University of Toronto we came to the realization that there are very few gra-

duates in Dental Public Health in Canada and all those, having their degree in Public Health were already engaged in positions with Municipalities or Provincial and Federal Governments.

In meeting again with the Medical Officer of Health, we came to the conclusion that in order to obtain a man with D.P.H. degree, the City of Calgary would have to engage a director of Dental Services and arrange with him to take his course at a later date.

To finalize all arrangements several meetings were held separately with the Mayor and with each medical officer of health of the City of Calgary.

A committee consisting of Dr. John W. Clay, Ross Upton and your President, handled all arrangements. It is my privilege and pleasure at this time to extend to Drs. Clay and Upton our sincerest appreciation and thanks on behalf of the Alberta Dental Association.

Dr. Alex Duncan is now taking his Dental Public Health Course at the University of Toronto.

There are interesting factors to be observed from this pioneering into Dental Public Health in Western Canada.

- (a) That the City of Calgary came to the conclusion that a Director of Dental Services ought to be a graduate in Dental Public Health.
- (b) That properly trained personnel are essential in the field of Education for preventive dentistry.
- (c) That if the municipality of Calgary is prepared to render such a service to its citizens then other municipalities may follow the Calgary example and bring the same benefits to their citizens.

(3) Increased facilities for dental care in all health centres.

We have a number of health units in the Province of Alberta. While these are staffed with medical personnel, I understand that only recently an attempt is being made to render dental care. Such units staffed with dental hygienists could

render invaluable service in dental education and prevention.

(4) Improved distribution of dentists between urban and rural areas and an increased number of dental practitioners.

Dentists have shown a tendency to locate in areas that offer cultural, educational and recreational advantages. Two-thirds of the dental personnel in Alberta are located in the cities (Edmonton, Calgary, Red Deer, Wetaskiwin, Lethbridge, Medicine Hat). There probably are enough dentists to meet the effective demand in urban areas. However there is need in many rural areas for additional dental personnel to meet the existing effective demand for dental services. The deterrent factors to rural practice are the desire particularly on the part of the womenfolk, to settle in the cities; the lack of living accommodation, office space, and utilities, such as electricity, gas and water. When improvement in these is established, a greater number of men will select rural communities for their practice.

I would like to mention at this time that the state of Virginia has had the same problem in their distribution in rural communities. The Virginia Council on health and medical care has stimulated the placement of dentists in rural communities by the construction of small clinic buildings to attract physicians and dentists on a monthly rental. After a man has been practising for several years he acquires an equity which either retains him in his rural community or otherwise he sells his practice to another man of his own profession.

Presently Canada is served by 5,298 dentists, 200 of whom are with the Armed Forces. Alberta is 4th in position with number of dentists, third in ratio of dentists per capita. During the last 15 years, since statistics are available, Alberta has replaced the retired and deceased dentists and augmented the dental personnel by 135, the second largest percentage increase of dentists (57%) in Canada.

In the same period of time Manitoba

had an increase of 11, Saskatchewan, 5.

While it appears that Alberta has done very well with dental personnel, yet we have not been able to fill the needs of rural communities.

The population of Canada is increasing at a ratio of $2\frac{1}{2}\%$ per annum, a faster increase than in U.S.A. and the fastest in the world. The Alberta increase is even greater. Our population in 1951 was 939,500, 1952 — 970,000, 1953 — 1,002,000, 1954—1,039,000 or at a ratio of $3\frac{1}{3}\%$ per annum. We have every reason to believe that this ratio will be maintained or even increased. People are moving into industrial development centres and into parts of the country, like Alberta, which have been stimulated by development of natural resources.

As it takes five years to graduate a dental student, let us for a moment consider the number of new personnel we may require in six years (as this year is gone by) from now. Having in mind an annual increase of $3\frac{1}{3}\%$ in population in six years we will need 20% more dentists or 80 new dentists. The ratio of death and retirement in our profession is $2\frac{1}{2}\%$, but due to the fact that our percentage of practitioners over the age of 55 is almost 40%, a conservative estimate of 30% ought to be taken, or in 6 years 18% of 400—72 new dentists—a total of 152.

During 1953 Alberta has had a phenomenal increase in the number of industrial employees, 52%, the largest in Canada. Industrial employment produces a greater effective demand upon dentistry. It would take at least 3 men per annum to satisfy this demand, or in 6 years—18 men.

The total number of new dentists required in 6 years—170 or the total of 30 men per annum, while at present the number of graduates remaining in the province is slightly over 15.

Most of us practising in Alberta, are graduates from the Universities of Alberta or Toronto. These two schools have been magnanimous in their approach towards the education of dentists from other

provinces. Only recently, Premier Frost of Ontario, realizing the need for more dentists in Canada, has announced that his province has set aside one million dollars for the enlargement of dental faculty and is prepared to match additional dollar for dollar any grant from the Federal Government.

The Province of Alberta has done its yeoman's share in the education of dentists from and for the provinces of B.C., Saskatchewan and Manitoba. I am informed by our registrar Dr. R. A. Rooney that 50% of the graduates who come from Saskatchewan remain to practise in Alberta. While our government contributes several thousands of dollars to educate a dental student from another province, we gain through those who remain to practise in our province.

Probably the end result is not as bad as that of Ontario. Only recently, Oct. 26th, the honorable W. J. Dunlop, Minister of Education, stated that 36% of Ontario dental graduates go outside the province to practise.

In being so charitable to the other provinces we augmented our own dental personnel and reduced our patient-dentist ratio by over 600 during the last 15 years.

The number of applicants for dental courses has fallen off during the last five years. During the last Dental Health Week we had numerous speakers addressing high school graduates in order to stimulate interest in Dentistry as a career. I am sure that during this coming Dental Health Week the same policy will be carried out.

Canada has gone through a surge of industrial development. Industry and commerce were demanding young men and women and were offering enticing inducements and opportunities for advancement. The young men and women had a choice between immediate employment, future security with large industrial firms or a five or six year course of hard work and low earnings during that period of time. What applies to Canada as a whole was even more accentuated in Alberta.

We are still a young country. Material standards of success outweigh intellectual desire and pursuit.

I believe the pendulum is swinging the other way. The total enrollment in Universities in Canada has increased by 2% during the last year. As soon as conditions resume a more normal trend, the number of applicants to University courses, including dentistry, will increase.

We can do much in stimulating interest in dentistry as a profession in our addresses to graduating high school students.

(5) *Training and utilizing of additional ancillary personnel—dental hygienists, dental assistants.*

DENTAL ASSISTANTS

No dentist should practise without the services of a dental assistant. It gives him an opportunity to extend his services to a larger number of people. Dentists with one assistant can render their services to 35% more patients than dentists without assistants. While the Canadian economic survey of dentistry is in preparation, it is safe to state that over 90% of dentists in Alberta employ assistants.

HYGIENISTS

The dental hygienist is the pioneer of her profession in Western Canada. We have only two practising in Alberta, employed by the Calgary and Edmonton school clinics, where they devote most of their time to education in preventive dentistry and to some examinations. Both are doing an excellent job.

As dental health educators in schools, home and school associations, in nurses' training schools, they could accomplish a great deal in preventive dentistry. Through their activity thousands of children's teeth could be saved by education alone.

Dozens of positions are available and ought to be made available to Dental Hygienists in dental public health programmes throughout Western Canada.

According to the Bureau of Economic

Research and Statistics compiled in USA in 1953, there are 4,900 full-time dental hygienists employed by dentists and 6.6% of dentists employ them. It gives the dentist the opportunity to extend his services to a greater number of people.

A school for dental hygienists in Alberta would go a long way in filling this dire need. This is our observation not only for the reason that we, as dentists, can see the full value of hygienists, but because as a health service we consider that a great benefit will accrue to the people of Alberta in the planning of a dental health programme for the younger generation.

TECHNICIANS

We have in Alberta three groups or types of technicians:

(1) A group (the most numerous) who are in legitimate practice. These are highly skilled men who work for the profession according to a prescription by the dentist.

(2) A group who conduct an illegal practice, by advertising plate repairs and after getting the patients to their places of business, induce them to have new dentures made (whether needed or not) in which case they do all the intra-oral work illegally. These are a menace to the public, as the construction of dentures requires not only high skill, but the knowledge of anatomy of the mouth, such as muscles, glands, nerve and blood supplies and temporo-mandibular joint, the knowledge of histology and physics, of all of which these men are totally ignorant.

(3) A third group registered under the Public Health Act in association with a dentist. One dentist has a string of seven or eight laboratories registered with him.

Criticism has been levelled at our profession that we have been unable to control some of our own members. The fact is that the ethical practitioners require little control. We have a disciplinary board, consisting of men of highest calibre, who are held in the highest esteem in the profession and in their individual

communities. The Board has judicial powers, even to examining witnesses under oath. The very few cases of dispute that have ever appeared before the Board have always been settled amicably and in the best interest to the public.

The reason for our inability to control 5 members of the profession has been entirely due to an iniquitous piece of legislation by a former government, which grants these individuals immunity from the Dental Act. Under the protection of Section 29 Public Health Act, they are acting in association with laboratory men. Considering the prosperous times we have had, one would think that these members of our profession could have readily pursued their practice in the normal channels. Why didn't they?

The above mentioned section of the Health Act is iniquitous and unjust. In effect, it is legislation for a privileged minority group of 5 or 6 dentists specifically exempted from the restrictions of the Dental Association Act who, for various reasons, cannot maintain private practices and for a dozen or so poorly qualified technicians. This arrangement lends itself to illegal practice by technicians and we have ample reason to know that such practices are going on and are, in fact, increasing. Because of the restrictions of the Health Act and a pertinent clause in the Dental Act, it is almost impossible to control such illegal activities.

(6) *Dental Research.*

"Every science has a beginning, but has no end—it is like a recurring decimal."—Checkov

Appeals to the public for funds for research in Cancer, Polio, Arthritis, Tuberculosis, Cardiac Diseases, etc., appear from year to year and the public is generous in its contribution to all such appeals.

During this last year the dentists of Ontario alone contributed \$150,000 towards dental research. Besides this, funds are available through grants from the Kellogg, Eastman and Guggenheim Foundations for approved research problems and, on top of this, through our National Research Council there are funds available for any pure research project which may be approved by the Council. But the difficulty is and always has been to obtain men properly trained in the basic sciences who are willing to devote their time and abilities, for small reward, investigating specific subjects.

May I be permitted to reiterate one statement: "Dental caries is a crippling disease in the formative age of the child with its effects on growth, metabolism and physical and mental development."

To combat this disease we need the whole-hearted and enthusiastic support of the profession, an enlightened public opinion through education and the assistance and the cooperation of our government, both municipal and provincial.

Health education may be defined as those methods which seek to influence human behavior in order to protect people against disease and maintain health. The strongest single influence upon public attitudes toward dental health is the direct dentist-patient relationship. Dentists impress their patients through their personal behavior and professional advice. Every association between patient and dentist contributes in some measure toward the total opinion and ultimate action of the patient.

There are few universal principles which can be applied to the complex of personal attitudes and reactions, but these few can be adapted to the particular situation and the particular individuals concerned. Intelligent direction of personal behavior and of professional practices provides a positive tool of health education and produces a direct personal return to the dentist.

Henry C. Sandler

—Third Public Health Workshop on Dental Care in Industry
January 21, 1955

The history of a successful plebiscite on fluoridation

by S. R. GELMON, D.D.S., Chairman, Fluoridation Committee, Saskatoon Dental Society.

The history of plebiscites on fluoridation in the United States and Canada is far from encouraging. Although the fluoridation of communal water supplies for the partial prevention of dental caries is a procedure that has become widely accepted amongst the health professions and in spite of the overwhelming mass of evidence in favour of this health measure both as to effect and safety, the lay public has been very slow to realize the benefits, but views the whole procedure with the greatest of suspicion. To say that a program of education in dental health is apparently necessary would probably be the understatement of the age. In the first instance the average person does not consider the ravages of dental decay as something to be particularly concerned about when compared with cancer or any of the other highly publicized diseases. In the second instance, there is a large group that seems to make it its business to disseminate misleading literature literally terrifying the general public.

Throughout the country, whenever fluoridation has been considered, the above two problems have had to be considered, namely how to educate the public and show the need for preventive dentistry and hence fluoridation and, more especially, to counteract the malicious propaganda of the opposition. Since Saskatoon is one centre where these objects have apparently been somewhat achieved after five stormy years, it might be of interest to outline the events leading up to the favourable plebiscite just completed.

As far back as 1949, the city health officer suggested, at a board of health meeting, that adding fluoride to the water seemed to be gaining credence and in

view of the dental caries problem in this city, might command consideration. In the fall of 1950 he was able to bring back a full report and it was suggested that the dental and medical societies also bring in their views. Each of these bodies appointed a representative who along with the medical health officer and the city engineer made up a committee of four. After much research and many meetings this committee agreed favourably and in June 1951 both the dental and medical societies went on record as favouring the immediate consideration of fluoridation by the proper city authorities. The latter however were in no great hurry and many excuses were given for not considering the matter. The wait and see attitude was most predominant as well as lack of sufficient information and the imminence of a change in the waterworks system.

In Jan. of 1953 the Dental Society pressed the issue and the mayor suggested that a brief be drawn up to be presented to city council, written so that "even an alderman who had no knowledge of medicine or dentistry, could understand it". The chairman of the committee, the president of the society and the public school dentist went to great lengths to prepare a detailed brief. When this was completed, copies were given to all of the civic officials. Each alderman was presented his copy by a member of the society who was prepared to discuss the matter and answer any questions.

The brief was formally presented at a standing committee meeting of the council. The health officer and the medical society representative also voiced their opinions. There was discussion both for and against with the final vote being 6 to 3 for fluoridation. At the following regular meeting of council the subject of a plebiscite was brought up with the final

vote being 7 to 3 for fluoridation and against a plebiscite. Both of these meetings were fully covered by the press and radio whose reactions were definitely favorable. The council suggested the immediate order of the necessary equipment. There was, however, some delay due to a backlog of orders.

Interest in the city was rising and the opposition began its campaign also. To counteract this adverse propaganda talks were given to service clubs, etc. and over the radio. Visiting dentists of importance were given interviews and news items from other cities were stressed. By the time the elections drew near, fluoridation was one of the big issues and the contestants ranged themselves both for and against. The news services were most co-operative in presenting the favourable aspect. However, the election results were not conclusive since the elected mayor and some of the aldermen had been pro-fluoridation but others of the elected aldermen had been against.

Immediately following the election a group naming itself the "Citizens Fluoridation Committee" was formed which proposed to circulate a petition asking for a plebiscite. Naturally this group was in violent opposition since the action of city council precluded the need for a vote. Nevertheless this group, by one means or another, got 9,000 signatures, one-third of the electorate. The city council felt it could not ignore such a large group and arranged for a plebiscite at the next general election.

It was at this point that the dental society made, what was felt, a wise decision. Under too much prodding the public might develop a stubborn resistance and so it was time for the health societies to step into the background and let the interested lay people convince their fellows that the need was there and that they had better do something about it. The dental society put a notice in the paper outlining the part it had played in bringing fluoridation to the attention of the public; the responsible

parties it had used for reference and a reiteration of its confidence in fluoridation. Beyond that it would go no further except to be of assistance if this assistance were desired.

The city health officer, members of city council, and members of social agencies proceeded to try to interest groups of every description such as home and school, church auxiliaries, labour, etc. In most cases the reaction was that of mild enthusiasm to complete indifference. However with constant reiteration interest was becoming intensified and within a month of election time there was quite a demand for literature and speakers. The film "Drop in the Bucket" was widely shown and speakers spoke to dozens of groups of varying sizes. One talk to a major service club was given wide coverage in the press and over the radio. The provincial department of health sent in a great deal of literature as well as inserting a number of advertisements in the newspaper. The opposition also used the newspaper for advertisements and these were of a devastating variety since they raised countless doubts and apprehensions in the mind of anyone who was not sure of the facts. The press at all times stressed the many organizations who were in favour of fluoridation such as the medical and dental societies, the Health League of Canada, the local medical school, etc. The majority of the local dentists and many of the physicians not only acted as speakers when called upon, but influenced their patients as much as possible. Just before the day of election the newspaper devoted its entire editorial page to summing up all of the arguments for fluoridation. There was a telephone campaign throughout the city but the opposition had one also. By election day any person of any intelligence should have had ample opportunity to be in possession of the facts not only from the dentists but as well as all other agencies interested in the welfare of the public as a whole.

The election results proved most in-

teresting. The vote was 9,700 for and 9,200 against. Over 9,000 people still had doubts and misgivings, or were still not aware of the facts. The pro votes seemed to come mostly from areas where there was a predominance of younger people with children, and who were of a good income level. The older people, and those who seemed to be of a lower income level apparently voted against. Though the city will now proceed with the installation of the equipment, a big job of education still has to be done so that the anti's may be won over, at least partially, and so forestall the possibility of trouble later on.

In conclusion it appears the dentists have their work cut out for them. When almost 50 per cent of the electorate refuses to take the word of those very people responsible for the general welfare, something must be done to convince Mr. Citizen that efforts made in his behalf are in an ethical and unselfish manner. This and not the dissemination of prejudice and untruth will advance the general weal of our population. If the public can be so educated and enlightened, especially through the assistance of lay bodies, there will be no problem in the acceptance of fluoridation.

Correspondence

Because of recent actions by certain technicians in some provinces, the Dental Laboratories Association of Ontario has presented the following letter, making its position clear. Ed.

March 17, 1955.

Dr. D. W. Gullett, Secretary,
Canadian Dental Association,
234 St. George Street,
Toronto, Ontario.

Dear Dr. Gullett:

At the last meeting of the Executive members of the Dental Laboratories Association of Ontario, held February 28th, 1955, considerable discussion was given to the press clippings from Vancouver and Winnipeg, dealing with the forming of a school for the training of dental technicians and a change in legislation that would permit dental technicians to work directly with the public, without the need of working through the dentist, as now exists.

The Executive members of this Association wish to go on record to you and the Canadian Dental Association, that we do not in any way, share the opinions expressed in these two referred-to newspaper clippings, nor did we have any part in the discussions which led up to this publicity.

To clear up any misunderstanding, we have formally resigned from the National Association of Dental Technicians of Canada, despite the fact that this particular Association apparently had no part of the meeting referred to in the press clippings; nevertheless, we do not wish to be represented by others than the Executive members of our own Association.

We would appreciate it if possible, the publication of this letter in the Canadian Dental Journal, to clear up any misunderstanding that might arise as to the opinion of the Ontario dental lab owners, members of the Dental Laboratories Association of Ontario.

We are enclosing for your information only and not for publication, a copy of the letter sent today to Mr. Paul Phenix, Secretary-Treasurer of the National Association of Dental Technicians of Canada, tendering our resignation.

Yours very truly,
(signed) F. J. Bryan, Secretary-Manager.

ABSTRACTS

Partial Denture Design in Relation to Occlusal Trauma and Periodontal Breakdown.

by W. KROGH-POULSEN, L.D.S., Dr. Med. Dent.

International Dental Journal, December 1954.

Partial denture design is only one part of the treatment-planning for partially edentulous individuals, and is not always the most important. The treatment prior to insertion of partial dentures, which may include elimination of dental foci, treatment of the mucosa and the periodontal tissues, treatment of caries and its sequelae, and occlusal equilibration, is most essential.

Fixed prosthetic appliances, when possible, are preferable to removable dentures.

The essential point in partial denture design is to control undesirable movements of the denture and the natural teeth by means of occlusal equilibration and stabilization of the denture. In addition

a hygienic and an aesthetic construction is necessary for the physical and mental comfort of the patient.

In order to obtain hygienic conditions the denture base should where possible be kept away from the marginal gingiva, and dental support should be secured, so that the denture cannot sink. It is essential to teach mouth hygiene to the patients.

In order to prevent periodontal breakdown, the design should include splinting of weak natural teeth and as a whole secure a balanced distribution of the horizontal components of force. Short, straight saddles should be supported at both ends. Free-end saddles, in order to minimize results of lever-action, should cover a large area of gingiva and the main occlusal load should be placed upon the middle part of the saddle or near the occlusal rest. In cases with a positive "biologic factor", rigid constructions serve well, provided they are stable. In cases with a negative "biologic factor", some sort of stress-breakers may be used.

The interpretation of decalcified sections of human dentine.

by ERIC W. BRADFORD, D.D.S.C.ST. and M.D.S. Sheff.

British Dental Journal, March 1, 1955.

By the use of modified decalcification and embedding techniques it has been possible to retain in decalcified sections, the various components of the dentine,

in the same relationship to each other as they bear in ground sections. In these decalcified sections the following portions of the dentine can be recognised:

(a) The dentinal process of the odontoblast cell.

(b) The matrix of the translucent area consisting of—a central and a peripheral sheath connected by radiating filaments and a fine matrix.

(c) The dentine matrix which may be divided into fibrillar and hyaline portions.

The various controversies over the structure of dentine have been resolved in the light of these observations and it is concluded that: the term *Tomes' fibre* should only be used to denote the artefact fibre of some decalcified sections and that the term "dental process of the odontoblast cell" should be used whenever it is desired to denote the cytoplasmic extension of this cell into the dentine.

The term "*Sheath of Neumann*" should not be used because of the historical con-

fusion which surrounds its use. The term "translucent area" should be used in its place when it is desired to denote the area of dentine immediately peripheral to the dental process of the odontoblast.

The term "dental tubule" should not be applied to the artefact space around *Tomes' fibre* in some decalcified sections, but only to the tubule which in vivo is occupied by the dental process of the odontoblast cell.

Ultrasonic Cavity Preparation —*A Progress Report.*

by CARL R. OMAN, D.D.S., and EDMUND APPLEBAUM, D.D.S.

The Journal of the American Dental Association, April, 1955.

The purpose of this progress report is to describe and interpret some of the effects of ultrasonic cavity preparation on the teeth of human patients and experimental animals.

To date, the ultrasonic handpiece has been used in the treatment of 40 patients of different age and sex. The cavity preparations have ranged from simple Class I cavities on occlusal surfaces to gingival cavities and standard Class II preparations. One porcelain jacket preparation has been clinically completed for an adult in which only the ultrasonic tool was used. In addition, regulation cavities have been cut in teeth that young patients were subsequently to lose as a part of orthodontic treatment.

The annoyance caused by the vibration that results from the moving parts of a conventional rotating drill was practically absent. Patients reported that virtually no pain was felt, even when dentine was being cut with the ultrasonic handpiece. Only three or four of the patients reported pain, and that seemed to occur at the time of penetration of the dento-enamel junction.

In four instances extreme pain was experienced when the tool was removed and

an explorer drawn over the surface of the dentine. On re-introducing the ultrasonic tool with a liberal slurry of abrasive and water, further cutting proceeded painlessly. It was found, however, that very soft carious material had to be removed with an excavator or with a conventional round bur. Ordinary leathery decay such as is found in routine cavity preparation is easily and effectively removed in the process of cutting the cavity.

Up to the present time, no subjective or clinical reactions have been noted in patients that might indicate degenerative changes in the pulps of treated teeth. Close co-operation will be needed, however, between practitioner and pathologist in order to determine what happens after cavity preparations with the ultrasonic cutting tool.

The primary purpose of these preliminary experiments was to find out whether the ultrasonic method of cavity preparation per se caused any changes in the pulp that were drastically different from those produced by the conventional bur. The answer in simplest terms is that, under the conditions of these experiments, the inflammatory changes in the pulps of teeth treated by the ultrasonic handpiece were about the same as those in teeth treated with the conventional bur when the cavities in both were filled with cement. Of course, the problem is more complex than is indicated in that simple statement, and more definitive work remains to be done.

Principles of Dental Health Education.

by ABRAM COHEN

Third Public Health Workshop on Dental Care in Industry—January 21, 1955.

The shocking dental conditions of American youth was first brought to the attention of public dental health workers in 1917 when dental examinations were made for draftees. 25 years later in 1942 similar examinations revealed very little improvement in the dental health of our youth, even though the requirements were only slightly more than those of 1917.

Today, 12 years after World War II examinations, we find that the average American adult at age 40 has lost half his teeth. Less than one-third of the population is receiving adequate dental care which must lead us to the conclusion that our present approach to the dental health problem has been inadequate only because of a better dental health situation.

There is agreement amongst public health workers that necessary factors are: (1) Availability of dental care; (2) Cost of initial dental care and maintenance; (3) Research; (4) Education; (5) Prevention.

While dental health education is not the panacea, it is of great importance. Since fluoridation of water supplies and the topical application of sodium fluoride have proven to be effective means in a caries prevention program, we must change our concept in developing an educational program.

Too frequently it is assumed that if the limitation of cost and the availability of services were eliminated, demand would at once equal need. Experience has indicated that this is not so. Among the upper income group where the cost of dental care is not a limiting factor, the demand for care may still be considerably below need, and among indigents in certain areas where dental services are readily available without charge, the rate of utilization is far below the need if no special health education is undertaken.

The Effect of Different Level of Carbohydrate Intake On Caries Activity in 436 Individuals Observed for Five Years.

by GUSTAFSSON, BENGT E., QUENSEL, CARL-ERIK, LANKE, L. S., LUNDQUIST, CLAES, GRAHNEN, HANS, BONOW, Bo ERIK, and KRASSE, Bo, *Acta Odonto Scandinavica*, 11:232-364, 1953. The Vipeholm Dental Caries Study.

The Journal of the Tennessee State Dental Association, January/55.

Observations made in the present investigation suggested the following conclusions:

The consumption of sugar can increase caries activity.

The risk of sugar increasing caries activity is great if the sugar is consumed

in a form with a strong tendency to be retained on the surfaces of the teeth.

The risk of sugar increasing caries activity is greatest if the sugar is consumed between meals and in a form in which the tendency to be retained on the surfaces of the teeth is pronounced with a transiently high concentration of sugar on these surfaces.

The increase in caries activity under uniform experimental conditions varies widely from one person to another.

Increase in caries activity due to the intake of sugar-rich foodstuffs consumed in a manner favouring caries disappears on withdrawal of such foodstuffs from the diet.

Cariou lesions may continue to appear despite the avoidance of refined sugar, maximum restriction of natural sugars and total dietary carbohydrates.

RESEARCH

FOREFRONT OF CANADIAN DENTISTRY

Statement of the Research Committee, C. D. A. Re: Fluorides and periodontal disease

Studies directed to an examination of the relationship of ingestion of fluorides in water to periodontal and gingival conditions permit the following conclusions:

1. Persons in an age group of 40-44 years residing since birth in areas where the fluoride content of water was negligible have lost four times as many teeth as persons of the same age group living in areas where the fluoride content in the water supplies is 2.5 p.p.m. (Russell and Elvove, 1951).

2. There is no significant difference in the prevalence of gingivitis between persons (mean age 57.1) residing in an area which contains 8.0 p.p.m. of fluorides and those (mean age 55.3) living in an area with a fluoride-free water supply (Zimmermann, 1955). The presence of 1 p.p.m. fluoride in drinking water had no effect on the gingivitis of children (age 6 to 14) (Brown et al., 1952).

3. There is no significant difference in the amount of calculus formation and alveolar bone resorption among residents (mean age 57.1) living in an area containing 8 p.p.m. of fluoride and the residents (mean age 55.3) of an area with fluoride-free water (Zimmermann, 1955).

The average length of residence of the two groups in these areas was 37 and 38 years respectively.

4. A radiographic study of rats on a fluorine-free diet (McClendon and Gershon-Cohen, 1954) revealed extensive periodontal disease in the molar regions and freedom from these defects in rats receiving 10 p.p.m. fluorine in drinking water. The evidence suggests that fluorine may be an essential trace element for optimal nutrition in rats.

There is no evidence that periodontal disease is more prevalent in areas where the water supply contains fluoride than in fluoride-free areas. Continuing studies can be expected to add further details to the knowledge already available.

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PUBLIC RELATIONS

Competition

A profession, according to the dictionary, is an occupation requiring an education. The members of the healing professions particularly, probably agree that although the fundamental facts are taught to us in our respective faculties, our practical education really begins when we graduate and should continue until our final day in practice.

Therefore it is most important that a very close relationship be maintained with our fellow practitioners because it is only from their experience as well as our own that we are going to continue our learning. With this thought in mind it might be well for all of us to consider our attitude toward our confrères in the dental profession.

Do we consider the man across the street or down in the next block one of our opposition? If so, once again consulting the dictionary, he is one who would take action against us or resent us. Or do we consider him as a colleague? If so, he is an associate or a fellow worker. All dentists should be sincerely interested in making our profession strong, respected and honourable in the eyes of the layman. The dental practitioner is confronted almost daily by problems which can frequently be solved by discussions with his confrères. A feeling of fellowship is a proven

method of instilling confidence in an individual and in the case of a dentist that confidence is readily detected by his patients.

Therefore let us consider how we can develop a feeling of fellowship:

1. Visit the new practitioner in your district. Make him feel that you are ever ready to discuss common problems with him.
2. Be an active member of your dental organizations
3. When that critical patient presents himself in your office condemning the services rendered by a previous dentist remember the Golden Rule. Even when the work in question does not measure up to your standards, remember that you do not know all the conditions under which this treatment was accomplished. This type of patient will frequently be telling one of your confrères a similar story about you sometime in the future. If we cannot say anything good about previous treatment it is well to say nothing.
4. When you can sincerely compliment a patient on previous services rendered it is good for you and good for your profession to do so.
5. It is well for us to remember that one of the most vicious enemies of a profession is jealousy among its individual members.

EDITORIAL

Some reflections upon the readership survey

One of the most popular selections from Gilbert and Sullivan's "The Pirates of Penzance" is the entertaining song "A Policeman's Lot is Not a Happy One." Gilbert could well have lyricized upon most other occupations in a similar vein, for it is a rare thing indeed when one accepts with absolute enjoyment all aspects of his profession or business. Editors are no exception to this concept. Feelings of concern and even self-recrimination are often present when pondering in retrospect decisions which have been made and commentaries given.

An editor of a publication owned by an association and known as the official organ of the association, has problems which constantly beleaguer him. No matter how he may wish to believe otherwise, editorial comments are often inferred to be official policy although it should be common knowledge that such policy is developed and issued through very specific channels. This latter fact, however, does not alter the possible interpretation of editorial commentary and opinions by those who may read the pages of the publication.

It is this concept which often must guide the expression of editorial opinion. Most editors cling to a nebulous quantity known as editorial prerogative, and herein lies the privilege and responsibility of expressing their views upon contemporary matters as their judgment dictates. It is quite possible that these views are often at variance with others belonging to the same organization, but this is perfectly acceptable if constructive thought

and performance are thereby encouraged. Positive action, in many instances, has to be provoked. However, a somewhat different problem is posed if an editor has views in opposition to some approved policy or enactment of his association. While he may feel completely justified in promulgating his opinions, the fact that his views may be misinterpreted as emanating in an official way from his society, should, unless he has irrefutable support and undeniable evidence to sustain him, deter him from placing his organization in a somewhat untenable position. There are occasions when all association editors fear that they may have compromised the organizations to which they belong.

A second matter which is immensely unpleasant for an editor of an association journal is the occasional necessity of rejecting an article conceived and written by one of the members. Here, an editor must attempt, to the best of his ability, to assess the value of the material presented. If it is a research type paper, there should be ample evidence of complete adherence to scientific methodology with conclusions based upon the stated facts. Should a clinical type paper be given, then one must consider if the information contained adheres to the concept of acceptable standards of service. Of course, the method of presentation of all articles should be in conformity with the nature of the journal which publishes them. When situations arise which necessitate the rejection of a contribution, the editor must constantly recognize his

greater responsibility to his publication and its readers than to the author. The awareness of this concept, however, does not ease its implementation.

The foregoing discussion is presented as an introduction to a report from the readership of this Journal. Several months ago a survey was taken to enquire into the professional reading habits of Canadian dentists and a portion of this survey related directly to the opinions held in respect to the general editorial content. These opinions proved interesting because they demonstrated a most fundamental fact that it is impossible to function in a manner which is acceptable to everyone. Many of the comments made by the recipients of the questionnaire were excellent and demonstrated a real concern for the future development of this publication. These various constructive criticisms and suggestions are at present being studied with a view to their possible implementation. Only a very few were critical in a destructive sense and of course, these comments are in no way helpful to the Journal or to the profession it serves.

The opinions expressed relative to the

various departments of the Journal given in percentages are as follows:

Feature Articles	
Excellent	35.5; Good 48.9; Fair 14.3; Poor 1.3.
Abstracts	
Excellent	18.9; Good 58.4; Fair 20.0; Poor 2.7.
Research Monographs	
Excellent	18.3; Good 56.1; Fair 19.4; Poor 6.2.
Editorials	
Excellent	34.4; Good 49.5; Fair 13.6; Poor 2.5.
Association News	
Excellent	34.4; Good 47.3; Fair 15.3; Poor 3.0.

The above percentages while giving some encouragement to expended efforts by no means give cause for complacency. Any publication, if it is to remain successful, must be a growing one—it must be willing to adapt or change as times and conditions alter. It must be desirous of providing leadership even if, at times, some within the Association may be at variance with the opinions expressed. The task of developing thoughts and ideas and provoking discussion is one of the major responsibilities of a professional publication. We hope the Journal measures up to that responsibility.

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions

- COURVILLE, C. B.: Cerebral anoxia. 1953. 257p. illus.
 DONALDSON, S. W.: The roentgenologist in court. 1954. 348p.
 EVANS, F. T.: Modern practice in anaesthesia. 2nd ed. 1954. illus.
 KOOS, E. L.: The health of Regionville. 1954. 177p. illus.

- McDOWELL, F., Brown, J. B., and FRYER, M. P.: Surgery of face, mouth, and jaws. 1954. 213p. illus.
 ORBAN, B. J., and WENTZ, F. M.: Atlas of clinical pathology of the oral mucous membrane. 1955. 135p. illus.
 ROBINSON, F. A.: Antibiotics. 1953. 132p.
 TYLMAN, S. D.: Theory and practice of crown and bridge prosthesis. 1954. 1017p. illus.

Book Review

The Health of the School Child — Report of the Chief Medical Officer of the Ministry of Education for the years 1952 and 1953. Price, 5 shillings. London, H.M. Stationery Office, 1954.

This is the thirty-seventh of a series of biennial reports concerning school health services in England and Wales, submitted by Sir John Charles, Chief Medical Officer, Ministry of Education and Ministry of Health. Although immediate administrative responsibility devolves upon local education authorities and health departments, the subject matter is treated from a national viewpoint. The health of the children is everywhere described as satisfactory. Considerable space is devoted to a review of a wide range of physical and environmental conditions including visual and auditory defects, skin conditions, parasitic infections, tonsils and adenoids, otitis media, diphtheria, poliomyelitis, tuberculosis, rheumatic fever, asthma, food poisoning and physical handicaps. Staffing of the school health service is discussed and, in a special section, observations are made with reference to the impact of the national health service after four to five years of operation upon the general pattern of school health services.

Section IV, which describes the school dental service, is of particular interest to public health dentists and others in administrative positions. It is noted that the decline in school dental personnel, following introduction of the national health service, was arrested and reversed in 1951, the number now employed being the highest on record. This is partially attributed to adjustments made since 1945 between comparative incomes derived from general dental practice and the school dental service.

Specific obligations of local education authorities for the maintenance of a school dental service under the Education Act, 1953 are set forth in detail. The school dental service of an authority is officially defined. All local authorities are required to appoint a principal school dental officer in accordance with regulations under the Act. The status of registered dentists without a professional qualification is discussed in terms of their eligibility for employment as school dental officers. Any dentist whose name appears on the Dentist's

Register is legally eligible for employment in the service.

Referring to the standard of dental equipment, it is stated that the Minister's policy is to encourage installation of high grade equipment. An abstract from the report of a county principal school dental officer sheds an interesting sidelight upon clinical philosophy. While acknowledging the importance of early dental attention, a radical, rather than conservative, approach is recommended when dealing with extensively decayed teeth, in the interests of serving the greatest number of patients.

The performance of oral hygienists, trained under a three-year experimental plan by the Ministry of Health, is reviewed. Though their value in the field of health education is acknowledged, their work is considered mainly additional to, rather than a substitute for, that carried out by dental officers.

Findings relative to the incidence of dental caries in 1948 and 1953 are discussed. In the two age groups studied (5 and 12 year old children) a substantial increase in caries in 1953 as compared with 1948 was noted. Reference is made to the steady increase in the per capita annual consumption of sugar in the United Kingdom, which had remained uniformly low during the war. A possible relationship between this phenomenon and observed caries experience is suggested.

The report of the United Kingdom Mission on Fluoridation of Domestic Water Supplies in North America is briefly commented upon. Dental Health Education is discussed from the standpoint of influencing food habits in the light of available media of health education, personnel and teaching aids. The potential contribution to this field by oral hygienists is also stressed.

The reader will be disappointed at the absence of clearly defined objectives for the program of the school dental service. One is also led to suspect a certain lack of continuity between preschool and school dental services, which would be considered a serious weakness on this continent. Other than that, this report provides an interesting account of current dental health effort with England's school population.

F. H. Compton.

The Association

Statistical Data re Dental Personnel in Canada

Following will be found the annual statistical data re dental personnel as of January 1955.

By comparison there are 52 more dentists in Canada than at the same time in 1954. Ratio of dentist to population is based on population figures supplied by the Federal Bureau of Statistics as of June 1954. The overall ratio of dentist to population for Canada has worsened during the year, being one to 2790 as of January 1954 and one to 2838 as of the same date this year. Taking into consideration forecasts for future popula-

tion increases and the future availability of new graduates it is indicated that the ratio will worsen until teaching facilities are available to produce more graduates.

Some 355 or approximately 6.4% of Canadian dentists are now employed on full-time salary. It is estimated that there were not more than ten dentists on full-time salary in the year 1938.

Losses by death and retirement are somewhat higher than for previous years. There has been a gradual increase in this number for several years. This increase may be related to the known fact that the average age of the dentist in Canada is relatively high.

TABLE I
STATISTICAL DATA RE DENTAL PERSONNEL IN CANADA
(As reported by Provincial Registrars) As of January 1955

Province	No. of Dentists Reported			During year of 1954				Total Increase or Decrease 1938*	Ratio Total No. of Dentists per Capita Population
	Male	Female	Totals	Deaths	Retirements	Moved elsewhere	Additions		
Nfld.....	31	2	33	1	0	4	5	+14	1/12061
P.E.I.....	35	0	35	0	0	0	1	+5	1/3000
N.S.....	195	3	198	4	2	5	11	+29	1/3399
N.B.....	118	1	119	2	0	1	6	+9	1/4597
Quebec.....	1273	4	1282	12	11	3	32	+405	1/3423
Ontario.....	2205	26	2231	27	36	9	83	+299	1/2262
Man.....	264	1	265	4	1	2	7	+11	1/3125
Sask.....	222	2	224	4	4	2	14	+9	1/3920
Alta.....	371	6	377	3	7	6	21	+140	1/2756
B.C.....	584	6	590	7	9	8	31	+222	1/2146
Totals.....	5303	51	5354	64	70	40	211	+1143	1/2838

Population figures used in this table are those as estimated by the Federal Bureau of Statistics as of June 1st, 1954.
*Figures for increase or decrease as compared to the year 1938 are given for comparative purposes.

TABLE II
MOVEMENT OF CANADIAN DENTISTS DURING 1954

To:	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	U.S.A.	Gt. Brit.	Australia	Norway	Israel	Germany
From:																
Nfld.....	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	1
P.E.I.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N.S.....	0	3	0	1	0	0	0	0	0	0	1	0	0	0	0	0
N.B.....	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Que.....	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0
Ont.....	0	0	0	0	0	0	0	1	0	2	2	0	3	1	0	0
Man.....	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Sask.....	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
Alta.....	0	0	0	0	0	1	0	1	2	4	0	0	0	0	0	0
B.C.....	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0

TABLE III
NUMBER PRACTISING SPECIALTIES, BY PROVINCE
(Only those practising the specialty designated full-time enumerated)

	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Totals
Dental Oral Surgeons (Exodontists).....	0	0	1	0	3	28	3	0	3	6	45
Orthodontists.....	0	0	1	1	14	41	3	1	4	7	71
Periodontists.....	0	0	0	0	2	15	1	0	1	2	21
Pedodontists.....	0	0	0	0	2	5	2	0	0	4	13
Totals.....	0	0	2	1	21	89	9	1	8	19	150

TABLE IV
NUMBER EMPLOYED IN HEALTH SERVICES BY PROVINCE
As of January 1955

	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Totals
Dental Schools: (Teaching Staff)											
Full-time.....	0	0	2	0	9	11	0	0	3	0	25
Half-time.....	0	0	0	0	18	9	0	0	18	0	40
Hospital Service											
Full-time.....	1	0	2	2	0	31	3	2	4	5	50
Half-time.....	0	0	0	1	0	4	0	0	0	3	8
School Dental Service:											
Full-time.....	2	0	1	1	15	17	2	1	4	20	63
Half-time.....	0	0	3	2	6	57	1	1	2	1	73
Public Health Service:											
Full-time.....	1	1	2	1	1	15	3	8	0	6	38
Half-time.....	0	0	0	0	6	0	5	0	0	1	12

TABLE V
TOTAL NUMBER EMPLOYED BY FEDERAL DEPARTMENTS
As of January 1955

Department of Veterans Affairs.....	39
Department of National Defence.....	152
Department of National Health and Welfare.....	8
Total.....	199

The Corps

A silver replica of the South Gate Seoul mounted on a black ebony base was presented to the Royal Canadian Dental Corps by Headquarters 25 Canadian Infantry Brigade on termination of service in Korea.

Lieutenant-Colonel William Spencer Murray formerly of No. 60 Dental Unit R.C.D.C. (M) was appointed Honorary Aide-de-Camp to His Honour the Lieutenant-Governor of Alberta on February 7th, 1955.

The annual conference of senior officers of the R.C.D.C. Regular and Militia was held in Ottawa from March 7th to March 10th. The conference was officially opened

by Major-General M. L. Brennan, Adjutant-General of the Canadian Army. Air Marshal C. R. Slemon, Chief of the Air Staff, R.C. A.F., addressed the Conference Dinner held Monday, March 7th.

The following Assistant Director of Dental Services representing the R.C.D.C. Militia attended:

Col. J. F. Edgecombe, Eastern Command
Col. L. E. Kent, Quebec Command
Col. C. L. Strachan, Central Command
Col. J. P. Whyte, Prairie Command
Col. W. E. Addinell, Western Command

Survey of Dental Practice—1954

Part V — Mean Expenses, Number of Persons Served and Average Fees

(A) Expenses of Conducting Dental Practice

Information was requested respecting the various items making up the expenses involved in keeping a dental office. Table XVIII gives the overall figures for Canada.

It is estimated that there were 4950 dentists practising independently in Canada during 1953 (Dentists on salary deducted). The averages given in Table XVIII indicate that these dentists paid approximately \$8,811,000 to dental laboratories and \$6,048,900 for dental supplies during 1953.

Laboratory services are shown to be the largest expenditure made by the dentist. It should be understood, however, that laboratory charges are strictly speaking not an office overhead expense for many dental operations, e.g. prophylaxis, dentistry for children, periodontal treatment, surgery, etc. Dental supplies are the third greatest expense in operating a dental office. These statements are made with reference to the mean expenses.

TABLE XVIII
Independent Dentists
Mean Yearly Expenses—1953

Item	Mean Expenses	Percent of Mean Total Expenses	Percent of Mean Gross Income
Office Rent.....	817	11.5	5.4
Utilities.....	243	3.4	1.6
Insurance.....	135	1.9	.9
Lab. Expenses.....	1780	25.0	11.9
Dental Supplies.....	1222	17.2	8.2
Salaries to Employees.....	1697	23.8	10.5
Depreciation.....	504	7.1	3.2
Other Expenses.....	722	10.1	4.7

cda '54 survey of dental practice.

Table XIX breaks down the mean yearly expenses of a dental office by provinces. Considerable variation exists in items. The total expenses involved in conducting a practice are highest in British Columbia and second highest in Newfoundland. No mean yearly item is consistent in all of the provinces. Mean yearly rent varies from \$505 in Nova Scotia to \$1086 in British Columbia. As shown in Table XVI Newfoundland is the only province where a high percentage of dentists employ technicians. This situation is reflected in Table XIX in that the mean expenses reported for salaries and

TABLE XIX
Independent Dentists
1953 Mean Yearly Expenses by Provinces

Item	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	Nfld.
Office Rent.....	1086	846	664	846	722	711	707	505	829	901
Utilities.....	265	208	163	187	226	202	254	180	321	165
Insurance.....	128	90	89	68	104	149	97	138	115	255
Lab. Expenses.....	1835	1831	2225	1782	1424	1383	2118	969	1774	378
Dental Supplies.....	1516	1229	1216	863	1112	834	1397	1025	915	2130
Salaries.....	1897	1559	1486	1110	1386	780	1402	805	968	2512
Depreciation.....	654	514	469	357	325	305	458	299	434	471
Other Expenses.....	942	815	609	518	581	447	677	467	705	804
Total.....	8323	7092	6921	5731	5880	4811	7110	4388	6061	7616

cda '54 survey of dental practice.

dental supplies are the highest and the laboratory expenses the lowest for any province.

(B) *Number of Persons Served*

The questionnaire requested the number of patients served and the number of patient sittings during the year 1953. The provincial averages for replies to these questions were more uniform than anticipated as shown in Table XX. Saskatchewan dentists on the average served the highest number (1415) of people. The average number of patients served by a Canadian dentist during 1953 was 1070. It is estimated that the dentists of Canada (excluding salaried dentists) served 5,296,500 persons or approximately 35% of the population during the year.

In all provinces, save three, patients were served with an average of two sittings. The average number of sittings per patient was three in British Columbia, Ontario and Prince Edward Island.

TABLE XX
Independent Dentists
Average Number of Patients and Sittings

Provinces	Average No. of Patients Per Dentist	Average No. of Sittings Per Dentist	Average No. of Sittings Per Patient
B.C.	1009	2741	3
Alta.	1176	2580	2
Sask.	1415	2767	2
Man.	1137	2712	2
Ont.	1017	2743	3
Que.	982	2201	2
N.B.	1108	2584	2
N.S.	1109	2647	2
P.E.I.	725	2520	3
Nfld.	1212	2761	2
Canada	1070	2637	2.3

cda '54 survey of dental practice.

Table XXI relates 1953 income of Canadian dentists to the number of patients and sittings of patients. It will be observed that the mean net income increases rather uniformly with increase in number of sittings. However, this ratio increase is not so uni-

TABLE XXI
Independent Dentists
Average Number of Patients Sittings—Net Income Level

Net Income Level	Average No. of Patients	Average No. of Patients Sittings
1- 949	476	813
950- 1949	536	1123
1950- 2949	652	1377
2950- 3949	834	1619
3950- 4949	829	1955
4950- 5949	925	2301
5950- 6949	1095	2590
6950- 7949	1075	2630
7950- 8949	1076	2701
8950- 9949	1136	3035
9950-10949	1230	2955
10950-11949	1307	3370
11950-12949	1401	3257
12950-13949	1374	3525
13950-14949	1356	3436
14950-15949	1483	3870
15950-16949	1311	4168
16950-17949	1090	3673
17950-18949	1824	4489
18950-19949	1075	4515
19950-24949	1110	4094
24950-29949	1783	5323
29950 and Over	223	3150

cda '54 survey of dental practice.

form when comparison of income is made to the number of patients, particularly in the higher income.

(C) *Average Fees*

The fee charged for four dental operations, namely: two surface amalgam, two surface gold inlay, silicate or acrylic filling and one full denture, was given in the replies to the questionnaire. The replies were averaged by provinces and appear in Table XXII. As stated previously "Blank" indicates those who neglected to insert the province and "Other" represents those dentists practising in Canada other than in one of the provinces. By averaging the fees given for each province and listing the provinces from west to east it is found that the order from highest to lowest is almost the same as the provinces are situated geographically. The actual order on this basis is as follows: British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Prince Edward Island, Quebec, Newfoundland, Nova Scotia, New Brunswick.

TABLE XXII
Independent Dentists
Average Fees—1953

	Two Surface Amal- gam	Two Surface Gold Inlay	Silicate or Acrylic	One Full Denture
Blank	5.46	18.00	5.86	75.66
Other	4.37	14.50	4.54	62.92
B.C.	5.52	18.77	5.35	70.71
Alta.	4.63	15.32	4.77	66.76
Sask.	4.03	13.38	4.12	67.10
Man.	4.60	15.01	4.55	62.62
Ont.	4.18	14.97	4.29	63.20
Que.	4.33	14.65	4.43	59.16
N.B.	4.00	11.87	4.38	52.50
N.S.	3.78	11.98	3.98	54.46
P.E.I.	4.00	13.00	4.00	65.55
Nfld.	4.33	14.16	4.25	56.11
Average for Canada.....	4.41	15.08	4.49	63.38

cda '54 survey of dental practice.

SUMMARY

The analysis of this survey has presented for the first time many facts related to the economics of dental practice in Canada. The purpose here has been to present actual data arising from the questionnaire circulated to the membership in February 1954.

Many other factors have been recorded and will prove useful for Association purposes. The figures given are average figures. It would be erroneous for any dentist to conclude, for example, that from the figures given in Table XVII he could automatically increase his income by increasing the number of chairs and hiring more employees. There must be sufficient demand or potential demand for dental service in the dentists' particular location to warrant such expansion. If the demand for dental service exceeds the capacity of a given dentist and his employees there is little doubt that the dentist can increase his net income by increasing the number of chairs and auxiliary personnel. Likewise, he should not conclude that by working fewer weeks during the year (Table XI) that his income will increase as other factors are involved. While average figures do not tell the whole story it is our opinion that, if studied carefully, the analysis of this survey should furnish a valuable reference for the individual practitioner.

This is the concluding part of the published analysis of the survey.

The next Annual Meeting of
THE CANADIAN DENTAL ASSOCIATION
will be held in conjunction with

THE ALBERTA DENTAL ASSOCIATION

at

Banff Springs Hotel

Banff, Alberta

JUNE 3, 4, 5, 6, 1956

Economic Security

THE JOURNAL is privileged to publish the following article on Wills by Mr. H. Allan Leal, Full-time Lecturer on Wills and Administration of Estates—Osgoode Hall Law School, Toronto. Part I appeared in last month's issue. Ed.

Your Will and Your Family

Part II

by H. ALLAN LEAL

PROVISION FOR DISTRIBUTION OF THE ESTATE TO THE FAMILY

There are alternative methods open to the testator for the distribution of his estate and his choice will depend upon a number of factors including, among others, the maximum protection of beneficiaries, the incidence of succession duty, flexibility for unforeseeable and unforeseen circumstances and the freedom of exercise of broad business judgment in the management of the estate.

If the net value of the estate is not large enough to involve any serious liability for payment of succession duty, and if all the beneficiaries are of full age and with ability to handle their own affairs and there is no complicating factor in the nature of the estate assets such as a business to be carried on until it can be disposed of advantageously, etc., then the will may be a simple one providing for immediate distribution. Where, on the other hand, succession duty is a serious factor or where there are infant children involved or the testator entertains doubts concerning the ability of the beneficiaries to deal wisely with sizeable sums, common prudence may dictate the use of a testamentary trust. Where, as is frequently the case, the wife is to enjoy the property during her lifetime and it will then pass to the children, the beneficiaries can be afforded maximum protection and succession duty minimized by resorting to the testamentary trust.

Simply stated a testamentary trust, that is one created by the testator in his will, would provide for the property being placed in the hands of trustees for in-

vestment and the annual income therefrom would be paid to the wife for her life with a distribution of the capital on her death to the children. Succession duty under such an arrangement is payable once, on the death of the testator, rather than twice, once on the transmission of his estate to his wife and again on the transmission from the wife's estate to the children. The saving on succession duties payable is realized in two ways: first, because there is only one transmission as demonstrated and secondly, because under the Succession Duty Acts, both provincial and federal, the rate of duty varies not only in accordance with the size of the original estate and the relationship of the beneficiary to the deceased but also in accordance with the amount which passes to that beneficiary.

A simple illustration will show the saving to be substantial. Let us assume that the testator dies leaving an estate with a net value of \$100,000, a wife aged 50 at the testator's death and three children, all over the age of 18 years and to whom the estate is to go in equal shares on their mother's death. If the whole estate is left outright to the wife the total Dominion Succession Duty payable on this transmission would be \$11,760. If the capital value remains unaltered until the death of the wife and she dies leaving the estate to her three children a further duty of \$9,618 would be payable. The combined duty would be, therefore, \$21,378.

Now let us assume that the original testator had set up a testamentary trust leaving his widow the income from the estate for her life and on her death the capital of the estate to be divided equally amongst the children. In this event the Dominion Succession Duty payable on the widow's life interest capitalized as

of the date of the testator's death and based on her life expectancy at aged 50 would be \$4,092. The duty payable on the interest going to the children on their mother's death would be \$4,322, or a total Dominion Duty of \$8,415 as compared with a duty on two transmissions of \$21,378. This represents a saving on Dominion Duty of \$12,963. Where the testator dies domiciled in Ontario or Quebec there is a duty payable both to the province and the Government of Canada but an allowance is made for provincial duty paid when calculating Dominion Duty and the saving would approximate the figure shown.

It will be noted in the above calculations that although the interest passing to the children is not taxable at the death of the original testator but only on the death of the life tenant, their mother, the duties payable on the interest eventually passing to the children have been commuted and paid on the death of the testator and therefore no duty is payable on the death of the widow. In either event whether the duty on the children's interest is commuted and paid immediately or left to be paid on the death of the mother there is only one transmission and not two. However, by commuting the duties payable on the children's interest at the death of the testator a further substantial saving is effected since if the duty is not paid on this interest until the life tenant dies the duty will be assessed on the whole capital value of the estate less the duty paid by the widow, assuming the testator has directed such duty to be paid out of the estate.

The insertion of a clause providing for the exoneration of the benefits passing to the beneficiaries from liability for succession duty and the payment of such duty out of the estate is an extremely important consideration. If this is not done the beneficiaries are charged individually on the value of the respective shares or benefits received and the widow may find herself in the position where she will be forced to apply the total income for the first few years in satisfac-

tion of the liability for succession duty, and worse still she may be required to pay income tax on this income even though she in fact received none of it. If the will provides for payment of succession duties out of the estate on benefits passing by virtue of the testator's death, some fund must be arranged for the payment of such duties. This can be accomplished by means of insurance unless there is sufficient cash in the estate to cover them. Otherwise it will be necessary for the trustees to sell assets, perhaps disadvantageously, to realize the money with which to pay them.

Where a testator restricts his wife to a life interest or the annual income from the estate, unless the size of the estate is very large and the income from it correspondingly large, provision should be made for the trustees, in their absolute discretion, to apply capital for the benefit of the widow in the event that the income proves inadequate for her needs or in the event of sickness, accident or other emergency or to provide suitable education for the children or to advance them in life.

The device of the testamentary trust may be improved by providing immediate legacies compatible with the size of the estate for the wife and grown children, thus providing some measure of financial independence without seriously impairing the protection afforded by the trust plan. The testator should, of course, provide that household furniture, and effects, as well as personal belongings including any automobile he may own at the date of his death should pass to the widow. If not specifically disposed of in this or other manner these things must be sold at the death of the testator and the proceeds added to the estate.

The family residence requires special treatment. Where the home is owned by the testator and his wife as joint tenants there is no need to provide for its distribution in the will since on the testator's death the whole interest will automatically pass to the widow without going through the husband's estate. This

is an obvious advantage of joint tenancy but, of course, the extent to which the husband has a beneficial interest in it at his death will mean succession duty is payable on that interest. Where the residence stands in the husband's name and is owned by him some provision must be made for allowing the widow and the family to remain in the house or if the property is to be sold, for alternative accommodation to be purchased or in the alternative the house may be left outright to the widow.

POWERS OF EXECUTORS AND TRUSTEES

The powers that should be given to executors and trustees in addition to those prescribed by law depend, of course, upon the nature of the trusts and the circumstances of the estate but in general it is more sensible to grant powers which they may never need, than to omit some which are necessary to achieve the result which the testator had in mind and without which the advantageous administration of the estate would be seriously hampered. It is the duty of the executor and trustee to get in the assets of the estate and convert them into cash within a reasonable time which, speaking generally, will be within one year of the testator's death. The proceeds of the sale of the assets will then be invested in authorized investments and applied in the manner provided for by the trust contained in the will.

This duty to convert applies equally to investments of which the testator himself has approved but which do not constitute authorized trustee investments. It may be advisable then, that the trustees be given the power to postpone, in their discretion, the realization of investments made by the testator in his lifetime and to invest the trust funds in other than strict trustee investments. In the matter of investments, the powers of the trustee are circumscribed by law in the sense that, unless otherwise provided, the trustee will be limited to these so-called "trustee investments" which comprise a very narrow range of bonds and real

estate mortgages. These investment powers may be enlarged while still affording an adequate measure of capital protection with a favourable income return, by authorizing investment in securities in which Canadian life insurance companies are entitled to invest, which include certain common and preferred stocks which have a history of regular dividend payments for a given number of years prior to the date of investment.

The selection of suitable persons to act as trustees is a matter that requires much care and particularly when the trusts are to extend over a considerable period of years consideration should be given to the appointment of a trust company either alone or with others, the former having the facilities for dealing with long-term investment and management of an estate. Legislation has been passed recently permitting trust companies to create Common Trust Funds or pools by which moneys belonging to individual estates and trusts can be combined for investment. These funds are closely controlled by government regulations both at their inception and in their operation and give small estates and trusts the investment advantages of large trust funds including safety of capital, stability of income, diversification of risk and satisfactory income yields by the simple expedient of small unit participation in a large fund. Some trust companies in Ontario have in operation funds both for restricted investments and those whose investment power may be extended by the will. No additional fee is charged for the investment of trust funds entrusted to the care of trust companies in Common Trust Funds.

It may not be redundant to conclude with the statement that a will is drawn to express the intention of the testator at the moment of his death and should be viewed not as one isolated act but as a continuous process adapted to the changes that are frequently taking place not only in the relevant taxing statutes but also and perhaps more importantly in the family circle and the nature and value of the assets of the estate.

Committees and Councils

Auxiliary Services

Following a very extensive presentation of pertinent information respecting the illegal practice of dentistry, the Auxiliary Services Committee made the following recommendations to the Board of Governors:

(1) That the Canadian Dental Association adopt a policy of urging the component provincial bodies to enforce the prescription clauses in their Acts or by-laws where such regulations are in force and where not that the provincial legal body be asked to publicize amongst its members the advantages of this system and urge its members to use it on a voluntary basis;

(2) That the Canadian Dental Association impress on its component legal bodies the urgent necessity of having its members report immediately any infraction of the provincial dental practices Act together with all circumstances in connection therewith;

(3) That the Canadian Dental Association adopt the approval of licensure of technicians as a principle for assisting in the control of illegal practice;

(4) That in most provinces where licensure is in effect the provincial legal bodies should discuss with the Technicians Association the advantages of closer co-operation in regulating illegal practices.

R. A. Rooney, Chairman

The Provinces

Saskatchewan

Hon. T. J. Bentley, Saskatchewan Minister of public health, recently announced Ottawa's approval of two dental health projects under the Federal Health Grants scheme.

The first project will make provision for support of a joint provincial health department—Saskatchewan Dental Association program of bringing to Saskatchewan dental specialists to improve the standards of dentistry for children by means of seminars at various points in the province.

The second project continues the program of training dental hygienists by means of bursaries, which was first commenced in 1951.

At the last monthly meeting, the **Prince Albert Dental Society** agreed to accept the responsibility of chairing the executive offices of the Saskatchewan Dental Association.

The officers are as follows: President, Dr. N. T. Godfrey; 1st vice-president, Dr. R. Reid; 2nd vice-president, Dr. J. M. Pourboix; secretary, Dr. G. H. Janzen; treasurer, Dr. N. R. Fedirko; chairman of committees, Dr. L. Connell.

The Society had the fourth in the series of the University of Illinois Post Graduate Courses for the year—namely "Occlusion."

Newfoundland

The election of Officers for 1955 resulted as follows:—

President, Dr. J. M. Darcy, 1st Vice President Dr. H. M. Brown, 2nd Vice President Dr. T. E. Harris, Secretary Treasurer Dr. D. K. Peters.

To the Newfoundland Dental Board:—Dr. M. F. Hogan, Dr. A. B. Kennedy, and Dr. G. P. French.

To the Committee on Public Health:—Dr. G. E. Mallam, Dr. G. Curtis, and Dr. M. F. Hogan.

To the Committee on Public Relations:—Dr. J. M. Darcy, Dr. F. A. Janes and Dr. E. P. Kavanagh.

Delegate to the Canadian Dental Association:—Dr. F. A. Janes.

Alternate:—Dr. J. M. Darcy.

Canadian Dental Journal Associate Editor Dr. G. Curtis.

Committee for Annual Meeting:—Dr. Poole, Corner Brook, Dr. F. A. Janes, Corner Brook, Dr. A. B. Kennedy, St. John's. G. E. M.

Dental Services Plan — Newfoundland Department of Health

In view of the urgent need for improved dental services in the Province and the recognized fact that geographic and transportation difficulties prevent, in many cases,



President and Secretary visit Pepperrell Air Force Base, St. John's, Newfoundland. Left to right:— Dr. D. W. Gullett, Sec'y C.D.A., Col. W. H. Wise, Commander Pepperrell Air Force Base, Dr. P. G. Anderson, Pres. C.D.A., Major Wm. R. Hutchinson Jr., Base Dental Surgeon.

the establishment of a dentist in the areas of greatest need, the Provincial Government has approved the following plan designed to assist dentists in establishing themselves in areas outside St. John's:

1. Study Grants.

(a) Study grants can be provided up to a limit of \$1,000.00 per year after the student has been admitted to the course of dentistry in a recognized dental school.

(b) On completion of his course the student is obligated to return to the Province for a minimum period of two years which two years must be spent in any area outside St. John's designated to him by the Department of Health.

(c) Each year spent in such designated district will act as canceling an amount of \$1,000.00 from the debt owed by the dentist. Thus in four years of practice the whole debt may be liquidated without any cash payment on the part of the borrower.

2. Subsidies.

Dentists who have entered into practice as a result of having entered into the above contract with the Provincial Government and who have gone to a designated area to practice will be supplied with—

(a) equipment up to an approximate value of \$2,500.00.

(b) office space.

(c) a payment not exceeding \$3,600.00 annually for doing half time dental work for school children in the area.

3. The contract does not obligate the Government of Newfoundland necessarily to provide subsidies to practitioners under the contract but the practitioner is obliged to accept such a part-time appointment if tendered to him by the Minister of Health.

British Columbia

Vancouver has been heralded as being the first city in Canada to authorize home fluoridation units. Canadian dentists will be interested to note that this resolution has

been passed by the **Vancouver and District Dental Society**:

"Whereas the memorandum report of the B.C. Research Council dated August 10, 1954 covered only the testing of one special device under very limited conditions, and

Whereas no provision is made for adequately testing regular production-line models of this device under actual working conditions, and

Whereas no statistical evidence is available to demonstrate the effectiveness of this device in reducing dental decay when it serves only one tap in a household, or only one household, and

Whereas the introduction of such an expensive device will certainly postpone the advent of community fluoridation in the Vancouver area and thereby delay the vast majority of citizens in receiving the benefits of fluoridation,

Therefore be it resolved that the Vancouver and District Dental Society goes on record as not recommending that any citizen install one of these devices."

Addressing the Vancouver Dental Society, Dr. James M. Mather, Head of the Department of Health at the U.B.C. Medical School and Head of the Committee on the Formation of Faculties, reported progress in the establishment of a **Dental Faculty at the University of British Columbia**. The plan is to build slowly and well. Funds have been granted by the government to appoint a Dental Consultant from a list of names from the U.S. and Canada. The task of the appointee will be to plan all the details regarding the proposed dental school, and his report should be ready for consideration by October of this year.

The University is confronted with several prior claims, but in planning for one of these, a basic sciences building, the idea is to include here the training of dental students in this part of their course.

The **Interior Dental Society** held a successful afternoon and evening meeting on March 3rd in Penticton when Dr. P. G. Anderson, President, and Dr. Don Gullett, Secretary of the C.D.A., presented well-received addresses. In the afternoon Dr. A. F. Rader, Vancouver prosthodontist, gave an interesting lecture.

The northern section of the **Pacific Coast Orthodontic Society** met in Vancouver on February 28th. Attending were 30 men from Portland and north. The chief essayist was Dr. Egil Harvold of the Kellogg Foundation who is on the staff of the University of Michigan; he spoke on the subject "Cleft Palate Rehabilitation."

Dentists from both East and West Kootenay were well represented at the meeting of the **Kootenay Dental Society** held on March 5th in Nelson. There is a geographic problem in that the area extends east and west across mountains and lakes, and 10 of the men travelled a total of 1850 miles to and from the convention, over icy roads.

Dr. A. F. Radar in the afternoon spoke for three hours on the subject "Mucostatics and Articulation."

At the business meeting new officers chosen were: President, Dr. Graeme Steed, Nelson; Vice-President, Dr. Wm. Fraser, Creston; Secretary, Dr. Norman Jennejohn, Nelson; Directors, Dr. W. C. Bradshaw, Trail, and Dr. M. K. Bauman, Cranbrook.

During the business meeting Dr. C. E. Bradshaw, elected representative of the Council of B.C. College of Dental Surgeons, gave a report on the activities of the governing body.

He told of the "extreme need" for more dentists in the province, pointing out that the increase in population had disrupted the dentist-population ratio resulting in more work for each individual dentist.

Dr. Bradshaw told the meeting that people today are much more conscious of the need for having dental work done. He stated that the province should have 50 new dentists per year in order to take care of the increase in population, and the decrease in number of dentists through retirement.

The College is fully aware of this dental need in the province, Dr. Bradshaw said, and as a result is strongly pressing for a dental faculty at U.B.C. At present B.C. students who wish to take up dentistry have been obliged to go outside the province for their tuition and as many of these universities were subsidized by their own province or state it was natural that they should give preference to students in their own areas. In many cases this has proven a hardship on British Columbian students as more often than not the quota has been filled and they are turned away.

The **Metropolitan Health Committee** has appointed Dr. D. J. Yeo as Director of Dental Services for Greater Vancouver. Dr. Yeo was formerly on the staff of the Provincial Department of Health, and now a close co-operation is anticipated between the Division of Preventive Dentistry, the Metropolitan Health Committee, and in years to come the proposed dental faculty at U.B.C.

D. H. M.

A motion was put forward regarding a re-endorsement for the fluoridation of the city's water supply, to be forwarded to the city council, in the hope that action on this matter will be forthcoming.

The speaker of the evening was Dr. Wilfrid J. Johnston, Director of Plastic Reconstruction, Queen Mary Veteran's Hospital; Consultant at the Montreal Children's and Queen Elizabeth Hospitals; Assistant Professor, Faculty of Dentistry, McGill University whose subject was "Facial Reconstruction with Plastic Prosthesis."

Dr. Johnston began his discussion by relating the story of the recovery, through plastic prosthesis, of a badly burned pilot in World War II at the hospital at East Grinstead, England, and who later wrote a book, "Way to Recovery," stressing the fight of a disfigured person back to life.

Dr. Johnston emphasized the fact that the patient's will to live is as important as the surgery and plastic reconstruction. In peace time most facial destruction needing this type of treatment is due to accidents, disease (cancer), etc. The patients wish to look normal again, as they are usually very freakish in appearance and are the subject of stares and ridicule. We must try to help them as much as possible to make them feel accepted by society.

Facial reconstruction goes back as far as history records, for there is evidence of artificial ears, eyes, nostrils etc. In 1832 there was the famous case of the Napoleonic soldier whose mandible was destroyed and who was fitted out with a functional silver mask, hinged and with teeth.

An excellent film was shown on the radical removal of a maxilla due to carcinoma of the antrum, in which the eye was also removed. Following the operation the patient was rehabilitated with an acrylic obturator to replace the antrum, and prosthetic appliances to restore the remainder of the face, including the eye.

The film was followed by slides of plastic reconstruction done for patients at the Queen Mary Veterans' Hospital, Dr. Johnston explaining impression and construction techniques.

The speaker was thanked by Dr. R. Harvey, who praised him for his wonderful service to these unfortunate persons.

D. S. M.

Prince Edward Island

This year the **City of Charlottetown** celebrates its Centennial. Included in the 35 conventions being held in the city will be the Annual Meeting of the Maritime Dental

Quebec

The monthly dinner meeting of the **Montreal Dental Club** was held in the Queen's Hotel, March 21, 1955.



DR. J. BEVAN KING

President, Academy of Dentistry, Toronto

Associations, July, 4th, 5th and 6th. While the convention provides table clinics, lectures and demonstrations on Dental subjects an interesting programme will be arranged for the entertainment of the ladies. The Centennial committee is co-operating with the Convention committee to insure a pleasant and profitable visit for all. The Prince Edward Island Dental Association takes this opportunity to invite you to attend the convention.

Ontario

Dr. K. J. Paynter of the Division of Dental Research of the Faculty of Dentistry addressed a recent meeting of the **Ottawa Dental Society**.

The society elected Dr. A. Slone president, succeeding Dr. M. M. Derrick. Dr. William Bryce was elected vice-president and Dr. Bruce Squires secretary.

Named to the executive committee were Dr. Charles Blaney, Dr. H. C. Bugden, Dr. John Callingham, Dr. E. J. Fox, Dr. Howard Young, Dr. John McIvor and Dr. W. G. Joynt. A representative of the Royal Canadian Dental Corps will also be appointed to this committee.

Dr. Balmer Beattie and Dr. Braithwaite Dixon were appointed auditors.

The society presented a brace of pipes to Dr. William Macartney in recognition of his completion of 50 years as a dentist. The presentation was made by Dr. R. M. Armstrong.

The speaker was introduced by Dr. I. W. Hamilton and thanked by Dr. John Callingham.

The 1954-55 calendar year of the **Academy of Dentistry, Toronto**, has been probably the most successful of all those that have gone before. The Winter Clinic which was held last November has already been dealt with in a previous issue of the Journal.

The 1955 portion of our programme opened with the first stated meeting on the evening of Thursday, January 20th, in Osler Hall. This was the "Dental Medical Night," and the essayist was Dr. Andre Robert from the University of Montreal, who was substituting for Dr. Hans Selye. Dr. Robert dealt with the subject of "The Role of Stress in Dental Medicine." This was an outstanding evening with an excellent attendance and a subject that was both exceptionally interesting and informative.

The second meeting on the evening of Thursday, February 17th introduced Dr. S. Charles Brecker who thoroughly explained the part that the porcelain jacket crown can play in mouth rehabilitation.

The third and final meeting of the year was held on Thursday, March 24th. This was a panel meeting with three of the main restorative materials in dentistry, namely, gold amalgam and plastics, being discussed by three of our own Academy members, Dr. J. M. Sheldon, Dr. Cameron Adams and Dr. F. T. Pearson. The interest which this form of meeting aroused was evidenced by the splendid attendance.

The results of the Academy of Dentistry elections were announced at this meeting. The following are the officers who still comprise the Executive Council of the Academy of Dentistry, Toronto, for the year 1955-56: President, Dr. J. Bevan King; Pres.-Elect., Dr. Harvey Milburn; Secretary, Dr. Robert W. Marshall; Treasurer, Dr. William A. Weir. Among those elected Councillors were: Dr. J. A. Bigelow, Dr. V. A. Herron; Dr. W. J. S. Jackson, Dr. K. Pownall, and Dr. Robert Brown.

Having just completed a most successful year with a membership very close to five hundred, the Academy of Dentistry is looking forward to a new year which will make an even greater contribution to the progress of the Dental Profession.

The **Lambton County Dental Association** met recently in a joint dinner session with the Port Huron Dental Association at the Sarnia Golf Club.

Feature of the meeting was the staging of a prosthetic clinic conducted by four Detroit dentists. It outlined the modern trend of constructing and fitting dentures.

Dr. W. R. Fletcher, president of the local association, presided at the meeting.

Among those attending the joint meeting was Dr. Harry K. Brown of Ottawa, dental consultant of the Federal Department of Health and Welfare.

Others included Dr. St. Claire Anderson, Detroit, formerly of Oil Springs, past president of the Detroit District Dental Association; Dr. D. M. Teal of Yale, Michigan, president of the Michigan State Dental Association and Dr. Merle Beauchamp, president of the Port Huron Dental Association.

At a joint meeting of the **London Dental Society** and members of the **London Academy of Medicine** on March 16, 1955, Dr. Wallace Graham, professor of medicine at the University of Toronto, and an authority on rheumatic diseases, discussed these ailments in relation to infection. Among those present were: Physicians, Dr. H. G. MacKichan, Dr. J. O. McCutcheon and Dentists Dr. James A. Guest and Dr. R. J. Sutherland.

Dr. C. H. M. Williams was guest speaker at the March meeting of the **Kingston and District Dental Society**. He is professor of periodontics at the Faculty of Dentistry, University of Toronto, and he spoke on the correction of disturbances of the bite of the teeth.

The Society reaffirmed its endorsement of the principle of fluoridation of the water supply and forwarded a letter to the Board of Health, urging that this procedure be adopted in Kingston without delay. The speaker of the evening also mentioned the benefits of fluoridation pointing out that the Research Committee of the Canadian Dental Association had studied this matter carefully for several years and strongly recommended fluoridation of water supplies.

Dr. Stan. Watson presided at the meeting which was attended by 25 dentists including visitors from Brockville, and Belleville.

The monthly meeting of the **Niagara Peninsula Dental Association** was held March 25th at the Hotel Barclay, Welland, at which the executive for the year 1955-56 was elected. The new executive is as follows: President, Dr. C. Wray; Vice-President, Dr. R. Tranter, Niagara-on-the-Lake; Secretary, Dr. D. Copeland, Grimsby; Treasurer, Dr. J. Sim, St. Catharines; Directors: Dr. K. Carroll, Port Colborne, Dr. Pattison, Welland; Dr. G. Burgman, Niagara Falls.

At a special meeting of the **Council of the Faculty of Dentistry** called to discuss the question of fluoridation of communal water

supplies, the following resolution was passed:

WHEREAS, This Council has reviewed the evidence relative to the effectiveness of fluoridation as a measure for the partial prevention of dental caries, and the evidence relative to the safety of this procedure; and

WHEREAS, This Council recognizes the value of continuing studies relative to fluoridation;

BE IT RESOLVED THAT

This Council endorses the principle of communal water fluoridation as a scientifically sound public health procedure.

Alberta

The regular monthly meeting of the **Calgary and District Dental Society** was held Monday night, March 21st, in the Palliser Hotel.

The guest speaker of the evening was Dr. Gordon Minty who delivered an address dealing with treatment of children in dental practice. He pointed out the importance of care of the foundation teeth as a prerequisite to a healthy permanent dentition and to prevent loss of space and thus crowding of the adult teeth. Dr. Minty pointed out that early loss of temporary molar teeth will almost always result in lack of room for the succeeding permanent teeth in that area, and therefore every possible care should be extended children from their earliest years.

On March 18th, the Calgary and District Dental Society again sponsored its annual Ladies' Night. Over 100 dentists and their wives attended the Dinner and Dance held at the Glencoe Club. Ladies' Night this year proved a continuing success thanks to the splendid efforts of Dr. Calvin Waddell who was in charge of arrangements.

Annual elections for officers of the society for 1955-56 were held. The new executive consists of. Dr. Ross Upton, President; Dr. G. C. Swann, Vice-President; Dr. M. J. Lipkind, Secretary; Dr. W. A. Nixon, Treasurer.

The March meeting of the **Lethbridge and District Dental Society** was held on March 5th on the occasion of the visit of Dr. P. G. Anderson, president of the Canadian Dental Association and Secretary Dr. Don Gullett. Following the dinner our guests addressed the gathering and everyone felt privileged to hear such excellent presentations by these two distinguished men. Dr. Gordon Miller gave the introduction and Dr. Elmo Fletcher expressed the thanks of our Society. Besides a record attendance many dentists from the country were present.

D. A. R.

British Commonwealth News

The Nair Hospital Dental College is affiliated to the University of Bombay for the B.D.S. Degree Course from June 1954. Admissions have accordingly been made to the first B.D.S. class this year. A candidate who has passed the Intermediate Examination in Science of the Bombay University (a two years' course which is equivalent to two years' pre-dental course of U.S.A. and Canadian Dental Colleges) or an examination of another University or body recognized as equivalent thereto is eligible for admission to the course. Sixty students are allowed to be admitted every year.

The Board of Faculty of Dental Surgery of the **Royal College of Surgeons** of England was asked some time ago by the Minister of Health to consider the question of the fluoridation of domestic water supplies. The following report was therefore drawn up, and last week it was accepted and approved by the Board of Faculty of Dental Surgery and by the Council of the Royal College of Surgeons.

"The Board is satisfied that the incidence of dental caries is much less among children and adults who have spent the whole of their pre-natal and post-natal life in areas where the drinking water naturally contains fluoride at a level of one part per million or more than among those in areas where the water is practically free from fluoride.

In 1945 the fluoridation of domestic water supplies for reducing the incidence of dental caries was started in certain selected communities in the United States of America and one in Canada. Eight of these communities in which fluoridation was started

from 1945-48 have been used as study centres. The results obtained each year have been compared with the base-line data, and in some centres, as an additional control, dental examinations have been undertaken in adjoining and comparable communities.

The evidence to date shows a reduction in dental caries incidence of 40% to 50% in children of the youngest age groups, which is comparable to what is observed in areas where the water has naturally a fluoride content of one part per million or more. In the older age groups the teeth have not been subjected to fluoridation during all their formative period, and the reduction is not as yet so marked. There is nothing to suggest that a water naturally containing fluoride has properties different from those to which fluoride has been added.

In a temperate climate, with a population of adequate nutritional standard, fluoride at a concentration of 1-1.5 parts per million as fluorine in the water produces an occasional white fleck on the enamel, but this cannot be detected without expert dental examination, and is found in only about 10% of children. The appearance of the teeth is excellent.

There is no scientific evidence of toxicity or of harmful effects in districts with the water supply fluoridated at this level.

The Board considers that there is very strong evidence in support of fluoridation, and welcomes the proposal that this procedure should be adopted in the first place in some selected districts that can be used as study centres."

British Medical Journal

February 26, 1955.

In Memoriam

Marjory McCubbin—Dr. Marjory McCubbin died in St. Vincent's Hospital, Vancouver, after a long illness, on February 3rd at the age of 56.

A 1921 graduate of the University of Glasgow, she registered in B.C. in the year 1929, and for 26 years was engaged in practice in Vancouver.

She is survived by her sister, Dr. Keating-Clay, Fiji Islands, and also by two nephews in Vancouver.

Edward Franklin McGregor—Dr. Edward Franklin McGregor of Ottawa, Ontario, died, in the Ottawa Civic Hospital on February 7th, 1955. He was 69.

Born in Almonte, Ontario, Dr. McGregor

received his early education in that town. He graduated from the Royal College of Dental Surgeons of Ontario in 1913, and then practised in Almonte and New York before moving to Ottawa, where he practised for 30 years.

During the first world war Dr. McGregor served as a Captain in the C.A.D.C. He was a member of Parkdale United Church, and of the Masonic Order.

An outstanding lacrosse player, he played for Regina and the Toronto Tecumsehs.

Dr. McGregor is survived by two brothers, Stanley of Port Arthur and Duncan, Chicago; and three sisters, Mrs. Edmund Green, Britannia; Mrs. W. C. Gray, Alberta, and Mrs. Harry Garson, New Jersey.

Cecil Stanley Gilbert—Dr. Cecil Stanley Gilbert passed away suddenly at his home in Newmarket on March 25, 1955. He was 57 years of age.

Born in Mansfield, he attended school in Alliston and graduated in 1920 from the Royal College of Dental Surgeons of Ontario. Dr. Gilbert practised in Shelburne for a short period and then in Newmarket until the present time. He served as a Lieutenant in the Royal Canadian Dental Corps from March 1941-1943. He was a member of the Board of Stewards, Trinity United Church, Newmarket.

Dr. Gilbert is survived by his wife, the former Marjorie G. Taylor and two sons, Wendell and Taylor.

•

James Henry Frain—Dr. James Henry Frain of Norwich, Ontario, passed away while visiting at his daughter's residence in Toronto on March 25, 1955. He was 95.

Born in Oxford County, he graduated from the Royal College of Dental Surgeons and the Philadelphia Dental College, receiving his L.D.S. in 1888. Dr. Frain practised for a time in Brantford, Tillsonburg and Woodstock prior to going to Norwich in 1899. He had been retired for the past ten years.

Dr. Frain was an honorary member of the R.C.D.S. He was an ardent Liberal and prominent in election campaigns. He was most active in municipal and community affairs and for 40 years served as town treasurer in Norwich, also acting as clerk for the Norwich Baptist Church.

Dr. Frain is survived by two daughters, Mrs. Percy L. Howell, Toronto, and Mrs. J. B. Hanmer, Norwich, and a brother, Dr. C. A. Frain, Cleveland, Ohio.

•

Stuart Somers—Dr. Stuart Somers of Drumheller, Alberta, passed away on February 26, 1955, at the age of 55.

Born in Moncton, N.B., Dr. Somers graduated from Dalhousie University in 1924, and practised in Rexton, N.B., before moving to Edmonton in 1928. For eight summers he practised in the N.W.T. and the Arctic; and then for 11 years he practised in Hanna.

Dr. Somers served in the first world war as a signaller, later becoming an officer flying cadet with the R.A.F., and during the second world war he served with the R.C.-D.C. in England and Italy, being discharged with the rank of Major. Since 1945 he had practised in Drumheller.

Surviving Dr. Somers is his wife, Dorothea; a daughter, Sally, of Calgary; and two sons, John and Ronald, of Drumheller.

Roderick Joseph McCallum—Dr. Roderick Joseph McCallum of Alexandria passed away at his home on March 16, 1955. He was 59.

Born at Apple Hill, Dr. McCallum attended school in Williamstown and later graduated from the Royal College of Dental Surgeons of Ontario in 1916. He practised for a short time in Apple Hill and then in Alexandria.

Dr. McCallum was a noted curler at the Alexandria Curling Club and a member of the Knights of Columbus. He was greatly interested in municipal affairs and an active member at St. Finnan's Cathedral.

Dr. McCallum leaves his wife, the former Agnes McDonald, a son Jack, Kingston, and two brothers William J., Apple Hill, and Dougald D., Edmonton.

•

Arthur Owen Parry—Dr. Arthur Owen Parry of Toronto passed away on February 12th, 1955. He was 67 years of age.

Born in Chentu, West China, where his father was a medical missionary, Dr. Parry graduated from the Royal College of Dental Surgeons of Ontario in 1922. He practised in Toronto until 1951, and then in Keswick, Ontario, for two years.

Dr. Parry served in the R.A.M.C. from 1917 to 1918. He was a member of the United Church of Canada, and of the Bedford Masonic Lodge.

Surviving Dr. Parry is his wife, Edna Tomlinson.

•

Curtiss Willie Asselstine—Dr. Curtis Willie Asselstine of Toronto died on March 10, 1955, at the age of 56.

Born in Odessa, Ontario, Dr. Asselstine received his early education in Toronto. He graduated from the Royal College of Dental Surgeons of Ontario in 1921, and thereafter practised in Toronto.

Dr. Asselstine was a member and past master of the Orange Lodge, and St. George's Lodge, A.F. & A.M., and a member of Rose Croix, Toronto Lodge of Perfection. He was an active member of Epworth United Church, where he served as an elder.

Surviving Dr. Asselstine is his wife, Catherine Simpson; one son, Hugh, and one daughter, Eleanor.

•

Jean-Louis Audet—Dr. Jean-Louis Audet of Montreal, passed away at his home on March 16, 1955.

Originally of Magog, Dr. Audet practised in Montreal for the past 25 years. He was a member of the School Dental Service.

Dr. Audet is survived by his wife, Yvonne, son Jean-Marc and four grandchildren.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1956	Banff, Alberta	June 3rd—6th
1957	Winnipeg, Manitoba	June 23rd—26th

FUTURE EVENTS

Date	Function	Location	Officer	Address
June 19-23	Annual Berkshire Conference	Lennox, Mass.	Dr. Irving Glickman	Tufts College Dental School, 136 Harrison Ave. Boston 11, Mass.
June 26-29	Western Canada Dental Society	Regina	Dr. W. K. Martin	708 Broder Bldg. Regina
July 4-6	Maritime Dental Associations	Charlottetown	Dr. D. T. Waye	130 Richmond St. Charlottetown
July 11-14	American Dental Soc. of Europe	Amsterdam	Jas. P. Molony	110 Harley St. London W.1. England
Aug. 14-20	Federation Dentaire Internationale	Copenhagen	W. Riis Klausen	1 Alhambravej, Copenhagen V.
Oct. 23-27	American Institute of Dental Medicine	Palm Springs California	Miss Marion G. Lewis	2240 Channing Way, Berkeley 4, California

SHORT GRADUATE COURSES

Date	Course	Location	Address
Sept. 19-23	Occluso- Rehabilitation	Tufts College Dental School	Dr. Louis Alexander Cohn, Tufts College Dental School Div. of Postgraduate Studies, 136 Harrison Ave., Boston 11, Mass.
Jan. 22	Orthodontia	Temple University	Dr. Louis Herman, Dir. of Postgraduate Studies, Temple University School of Dentistry, 3223 North Broad Street, Philadelphia, Penn.

NOTICE

Occluso-Rehabilitation II—Special Participation Course
Every other week on Friday and Saturday 9 a.m. to 5 p.m.

Seven months beginning October 7, 1955

Tuition \$1000.00—Enrollment limited to twelve

Dr. Louis Alexander Cohn

This is a participation course in which each student will start and complete a patient who requires all phases of Occluso-Rehabilitation. Dr. Cohn will personally supervise all the clinical and laboratory activities. The inter-relationship of Occluso-Rehabilitation and Periodontal Therapy will be stressed. It is recommended that each participant bring a patient from his private practice. However, clinic patients will be available. Occluso-Rehabilitation I is a prerequisite for this course.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Résorption des racines des dents permanentes chez les jeunes adultes

par M. MASSLER, D.D.S., M.S., Chicago, et
GEORGES PERREAULT, D.D.S., M.S., Montréal.

On a cru longtemps que la résorption des racines des dents permanentes ne constitue pas un phénomène normal, mais qu'elle indique plutôt un état pathologique relié soit à une infection périapicale, soit à une lacune d'un traitement endodontique, soit à une maladie constitutionnelle, soit à un trauma occlusal.

En 1927 et en 1929, Ketcham fut le premier à démontrer qu'une légère résorption des racines permanentes se produit dans des conditions tout à fait physiologiques. Depuis ce temps, plusieurs autres (Rudolph, 1936 et 1940; Becks, 1936 et 1942; Hemley, 1941; Henry et Weinmann, 1951; et Malone, 1951) ont démontré que ces racines sont sujettes à un certain degré de résorption. Ce degré de résorption, beaucoup moins considérable que dans les dents temporaires, se limite généralement au cinquième apical de la racine. Malone,

en 1951, a donné à ce phénomène le nom de résorption "idiopathique" de la racine.

But de cette étude: Ce travail a pour but d'établir une comparaison entre la fréquence et le degré de résorption idiopathique de la racine des dents permanentes chez des hommes et des femmes constatés dans des radiographies intra-orales de toutes les dents. Chez les femmes, l'âge varie entre 18 et 25 ans; chez les hommes, entre 20 et 25 ans. Le nombre de dents examinées fut de 2730, chez 151 femmes, et 3114, chez 150 hommes.

Méthode d'examen: On lut chaque film à l'aide d'une loupe d'un grossissement 3X. Chaque racine fut examinée dans deux films différents, donc sous deux angles distincts. On n'a pas tenu compte des radiographies qui ne montraient qu'une face d'une racine et où on doutait de la résorption.

Classification: La méthode employée pour déterminer le degré de résorption de la racine est la même que celle em-

ployée par Malone en 1951. Elle se lit comme suit:

Degré ou
type de ré-
sorption

Description

- | | |
|----|---|
| 0 | Aucune évidence de résorption. |
| ? | Résorption incertaine. Le contour de la racine est intact, mais il semble qu'il y ait de petits endroits isolés de résorption. La lamina dura est brisée et la membrane périodentaire est congestionnée dans la région périapicale. |
| 1+ | L'apex de la racine est clairement émué et résorbé pour au moins 1mm. à 2mm. La lamina dura est brisée et la membrane périodentaire est congestionnée dans la région périapicale de la dent. |
| 2+ | Résorption de l'apex pour au moins 2mm. à 4mm. La lamina dura est interrompue et la membrane périodentaire est plus volumineuse. |
| 3+ | Résorption de la racine de 4mm. à la moitié de la racine. |
| 4+ | Plus que la moitié de la racine est résorbée. |
| #5 | Résorption de la racine reliée à une infection, kystes, etc. (degré de résorption non établi). Voir aussi la figure 5. |

Analyse statistique. Le nombre moyen des dents montrant une résorption idiopathique de la racine fut calculé, pour chaque groupe, en additionnant le nombre total de ces dents (1+, 2+, 3+, et 4+) et en divisant cette somme par le nombre total de personnes examinées.

L'index de résorption de la racine fut calculé pour chaque individu en additionnant les symboles indiquant le montant de résorption idiopathique de la racine (1+, 2+, 3+, et 4+) et en divisant cette somme par le nombre de dents affectées chez chaque personne. Les dents ne présentant aucune résorption, celles où la résorption était incertaine et celles indiquées #5 furent omises de cette compilation. L'index pour chaque groupe fut obtenu en additionnant les index individuels et en divisant par le nombre total des personnes examinées. Les différences trouvées entre les moyens termes du groupe hommes et celui du groupe

femmes furent vérifiées par le "t" test d'après la formule suivante:

$$t = \frac{M_1 - M_2}{s} \sqrt{\frac{n_1 \times n_2}{n_1 + n_2}}$$

M1 et M2 sont les moyennes respectives; s, la déviation standard commune et n1 et n2 sont le nombre des individus dans les deux groupes.

Les chances d'erreur furent évaluées à 1% (moins d'une chance sur cent que cette différence provienne du hasard.)

Résultats

Un degré plus or moins grand de résorption de la racine de quatre dents permanentes ou plus fut démontré chez 100% des personnes dont les radiographies dentaires furent examinées. (figure 1) Quatre-vingt-un et huit-dixième pour cent des dents chez les hommes et 90.9% des dents chez les femmes montrèrent, à différent degrés, des signes de résorption de la racine. Dans seulement 0.9% des cas, chez les femmes, et 2.7%, chez les hommes, la cause (mauvaise obturation des canaux, infection) de la résorption de la racine était évidente. (figure 2A) La

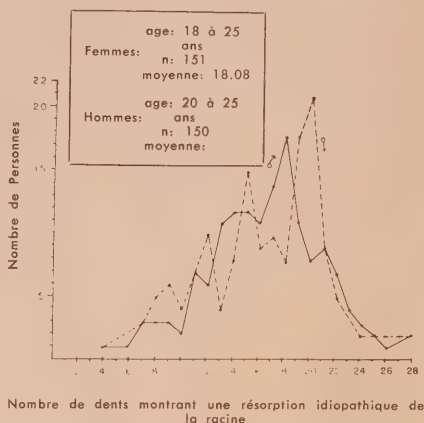


FIG. 1. Distribution de la fréquence du nombre d'hommes et de femmes avec le nombre de dents montrant de la résorption idiopathique de la racine.

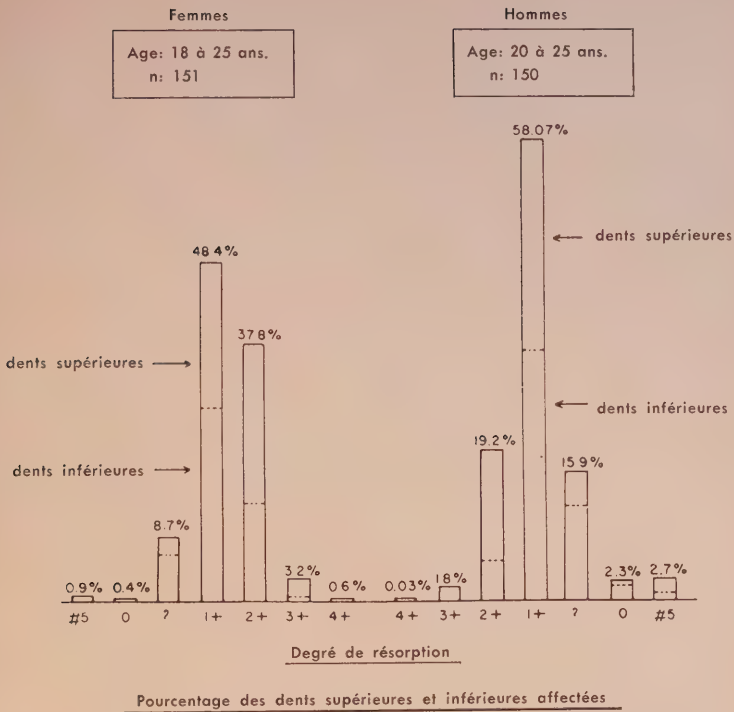


FIG. 2A. Distribution de la fréquence des différents degrés de résorption de la racine chez les hommes et les femmes. A noter, le plus grand nombre de femmes avec des résorptions de la racine de 2+, 3+, et 4+, et plus grand nombre d'hommes avec des résorptions de ? et 1+.

cause de la résorption des autres dents étant inconnue, l'expression "résorption idiopathique" fut employée pour décrire cet état.

Dans le groupe des femmes, on obtint une moyenne de 18.08 dents résorbées par personne, tandis que, dans le groupe des hommes, la moyenne était de 16.2 (figure 1). Cette différence était statistiquement significative ($t = 3.48$). Il y avait moins d'une chance sur mille que cette différence provenait du hasard ($P 0.1\%$).

La figure 2A montre la distribution de la fréquence dans le nombre de dents où différents degrés de résorption de la racine sont démontrés. L'analyse révèle que les femmes avaient plus de dents résor-

bées que les hommes (90.9% vs 81.8%) et que, dans le groupe des femmes, il y avait plus de dents avec une plus grande résorption (2+, 3+, +4) que chez les hommes. Les hommes, réciproquement, avaient un plus grand nombre de dents avec une légère résorption (1+), incertaine ou absente (figure 2B). L'index de la résorption des racines était de 1.5 chez le groupe des femmes et de 1.27 chez les hommes (figure 3). La différence était statistiquement très significative ($t=8.27$).

Comme on le disait plus haut, nous pouvons dire que, chez les femmes, la moyenne des dents atteintes de résorption de la racine était de 18.08. L'index de 1.5 indique que l'on peut s'attendre à voir

une résorption légère (1+) sur 9 dents et une résorption d'un degré plus grand (2+) sur 9 dents. Chez les hommes, 16 dents montreront des évidences de résorption. L'index de 1.27 indique que 12 dents seront légèrement résorbées (1+) et 4, résorbées à un degré plus grand (2+).

La figure 4 montre une très apparente symétrie bilatérale dans le modèle de la résorption de la racine dans le groupe et des femmes et des hommes. Cependant, les dents du maxillaire montrèrent plus de résorption que celles de la mandibule (figure 2A en bas et figure 4).

L'ordre de susceptibilité des dents à la résorption de la racine dans cette étude n'est pas consistante avec les études antérieures. Nous avons trouvé que les prémolaires supérieures étaient les plus susceptibles et que les incisives inférieures de même que les molaires étaient les moins susceptibles à la résorption de la racine. (Table 1). Presque toutes les études antérieures (Becks, 1936; Rudolph, 1940; Hemley, 1941; et Malone, 1951) rapportèrent que les incisives inférieures étaient les plus susceptibles à la résorption.

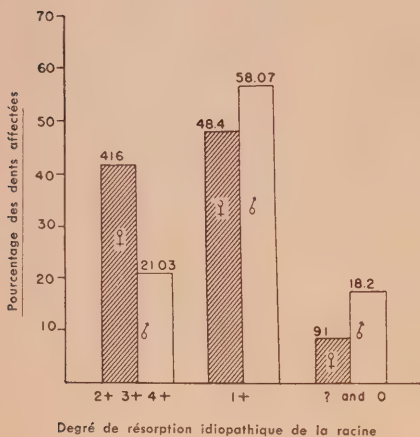


FIG. 2B. Comparaison entre les hommes et les femmes quant au pourcentage des dents affectées par différents degrés de résorption idiopathique de la racine.

Discussion

Une connaissance du potentiel de résorption des racines des dents permanentes est d'une grande importance pour l'orthodontiste, puisque le déplacement des dents est un puissant stimulus à la résorption des racines. Un patient, chez qui un très haut potentiel de résorption est observé, sera, au point de vue orthodontique, un cas douteux (Becks, 1939).

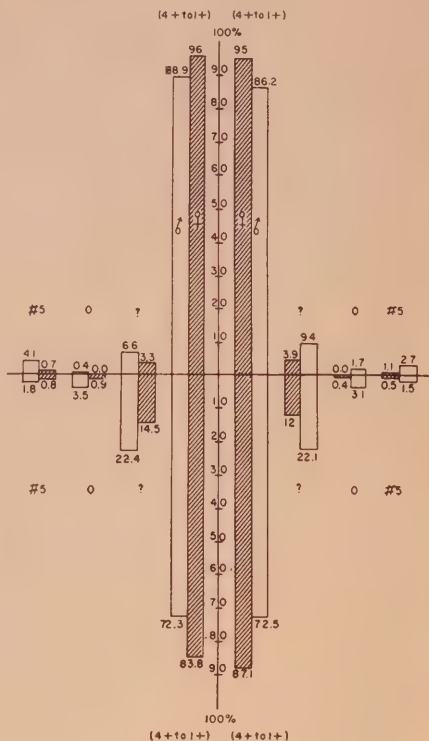


FIG. 4. Comparaison entre le nombre (%) des dents montrant une résorption des racines dans les quatre quadrants. A noter la forte symétrie bilatérale dans le nombre de dents affectées. A noter aussi que plus de dents sont affectées dans le maxillaire que dans la mandibule. (Voir aussi Figure 2A pour une comparaison détaillée entre les dents du maxillaire et celles de la mandibule).

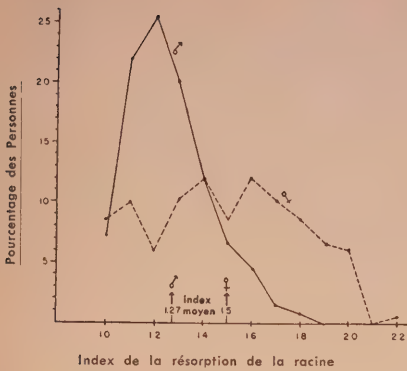


FIG. 3. Diagramme montrant la distribution de la fréquence de l'index de résorption de la racine des dents chez les hommes et les femmes.

La question suivante se pose. Quelle est la cause de la résorption idiopathique de la racine, surtout chez les personnes particulièrement susceptibles à cette résorption? Becks (1939), en se basant sur les changements de l'évaluation du métabolisme basal de ces personnes, suggère une

dysfonction endocrinienne. D'autre part, les travaux de Gruneberg (1938) sur des souris grises et ceux de Schour (1949) sur les rats "ia" suggère que la résorption ostéoclastique de l'os et de la dent est soumis à des facteurs génétiques. Cette constatation, par son évidence, supporte l'hypothèse que les variations dans le potentiel de résorption chez différents individus est une caractéristique génétique plutôt qu'une caractéristique acquise. Cette question devrait être étudiée plus à fond par l'analyse des tendances familiales dans le cas où la résorption idiopathique fait de rapides progrès.

Une puissante activité ostéoclastique n'est probablement pas confinée aux racines des dents, mais devrait aussi influencer l'os alvéolaire. Il serait intéressant de déterminer la relation entre la résorption idiopathique de la racine et celle de la crête alvéolaire.

Conclusions

Cette étude confirme définitivement qu'un potentiel de résorption existe à

TABLE 1A

Distribution quant au degré de résorption des racines de 2730 dents examinées chez 151 femmes

Degré de résorption	Pourcentage des dents affectées						
	Classe de dent						
	1	2	3	4	5	6	7
4+	1.2	0.8	0.0	0.0	0.4	3.8	0.0
3+	2.7	1.2	6.7	11.6	5.5	4.3	0.0
2+	36.5	40.2	46.8	58.0	56.2	49.2	27.6
1+	56.0	47.8	44.5	29.0	32.8	33.7	72.3
?	1.5	7.4	1.9	1.3	3.9	8.3	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
#5	2.1	2.6	0.1	0.1	1.3	0.7	0.1
Nombre de dents supérieures examinées...	254	239	205	233	252	160	22
#5	0.9	0.1	0.1	0.5	1.9	0.8	0.3
0	2.6	0.4	0.0	0.4	0.4	0.0	0.8
?	20.1	16.4	15.8	11.3	7.2	11.2	10.8
1+	50.6	60.3	55.5	51.5	53.9	60.7	61.2
2+	24.3	20.9	28.1	35.9	35.3	26.7	23.5
3+	1.5	1.9	0.5	0.4	1.3	0.6	0.8
4+	0.0	0.0	0.0	0.0	0.0	0.0	2.6
Nombre de dents inférieures examinées...	263	192	189	237	218	156	110

TABLE 1B

Distribution quant au degré de résorption des racines de 3114 dents examinées chez 150 hommes

Degré de résorption	Pourcentage des dents affectées						
	Classe de dent						
	1	2	3	4	5	6	7
4+	0.0	0.0	0.0	0.0	0.0	0.0	0.9
3+	0.4	0.0	1.1	10.8	3.3	5.8	0.9
2+	11.3	16.0	48.4	46.2	38.7	17.4	19.3
1+	72.5	58.1	44.1	40.8	49.4	57.1	69.8
?	12.6	15.9	5.2	1.7	3.8	10.9	6.0
0	0.0	1.9	0.0	0.0	0.9	2.8	2.0
#5	3.2	8.1	0.5	0.5	3.9	6.0	1.1
Nombre de dents supérieures examinées...	259	257	270	231	232	175	87
#5	3.7	2.8	0.2	0.5	1.9	6.1	0.1
0	14.6	3.0	0.7	0.0	1.7	1.8	1.2
?	28.9	27.3	16.2	19.7	30.8	11.2	21.7
1+	48.5	63.8	73.3	59.0	53.3	67.8	70.1
2+	3.6	3.1	9.6	20.8	11.5	11.8	6.3
3+	0.7	0.0	0.0	0.0	0.8	1.3	0.6
4+	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nombre de dents inférieures examinées...	273	257	259	258	233	152	174

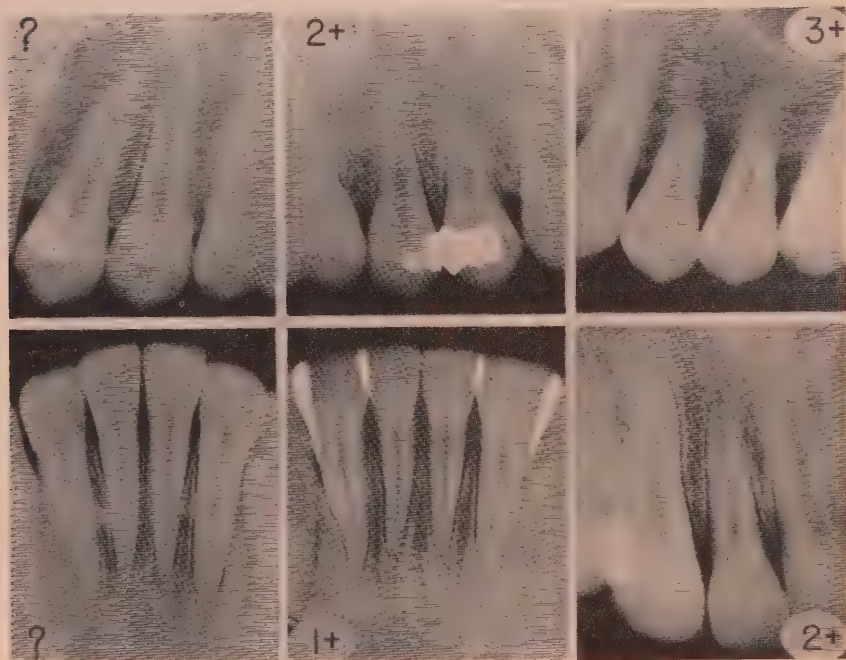


FIG. 5. Radiographies illustrant des degrés différents de résorption idiopathique des racines des dents permanentes.

TABLEAU 2A

Distribution de la résorption de racines des dents du maxillaire et de la mandibule chez 151 femmes

Type et degré de résorption	Maxillaire Dents affectées		Mandibule Dents affectées		Total	
	No	%	No	%	No	%
4+	12	0.8	3	0.2	17	0.6
3+	72	5.2	15	1.1	87	3.2
2+	647	47.3	386	28.2	1033	37.8
1+	568	41.7	754	55.3	1322	48.4
?	52	3.9	187	13.7	239	8.7
0	0	0.0	11	0.8	11	0.4
#5	15	1.1	9	0.7	24	0.9
	1366	100.0	1365	100.0	2731	100.0

TABLEAU 2B

Distribution de la résorption de racines des dents et du maxillaire et de la mandibule chez 150 hommes

Type et degré de résorption	Maxillaire Dents affectées		Mandibule Dents affectées		Total	
	No	%	No	%	No	%
4+	1	0.06	0	0.0	1	0.03
3+	48	3.2	7	0.4	55	1.8
2+	444	29.4	153	9.6	597	19.2
1+	822	54.6	985	61.4	1807	58.07
?	125	8.3	371	23.2	496	15.9
0	14	0.9	59	3.5	73	2.3
#5	54	3.54	31	1.9	85	2.7
	1508	100.0	1606	100.0	3144	100.0

l'apex des racines des dents permanentes. Cette tendance à la résorption, bien que moins grande que chez les dents temporaires, se voit pratiquement sur toutes les dents permanentes (figure 5). Le potentiel de résorption varie de personne à personne et n'est pas le même pour toutes les dents d'une même personne. (Tables 1 et 2) Cette étude indique que le potentiel de résorption des dents permanentes est plus élevé chez les jeunes femmes adultes que chez les hommes. (Figure 3).

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A propos d'expertises en prothèses dentaires

P. Budin (Rev. Française d'Odonto-Stom., No. 5, p. 685) examinant les litiges se rapportant à la prothèse, rappelle qu'elle n'est pas une partie entièrement industrielle de l'art dentaire comme certains attentus de jugements ont tendance à la considérer.

Lorsque l'on examine les causes locales et générales d'échecs en ce domaine, on est obligé de reconnaître que la prothèse est dépendante de l'être vivant au même point qu'on ne peut faire un coureur à pied d'un mutilé à qui l'on a donné une jambe artificielle.

L'absence de crête alvéolaire, les troubles de l'articulation temporo-maxillaire, le fait que le malade est un édenté récent ou ancien, la psychologie même du patient, tout contribue à une réussite ou à un échec, absolument indépendant de la pièce confectionnée.

La prothèse est une partie de la pathologie buccale au même titre que l'obturation de la dent. Elle ne saurait être considérée comme une fourniture pure et simple, car elle est liée à la vie et aux modifications morphologiques de l'organisme vivant qui doit la supporter.

Autant d'arguments pour faire comprendre qu'une prothèse ne saurait être confectionnée que par des spécialistes de la question physiologique, morphologique de la bouche.

Nouvelles de l'Association

Statistiques sur le nombre des dentistes, au Canada, pour 1954

On trouve plus bas les statistiques annuelles au sujet du nombre des dentistes au Canada, au 1er janvier 1955.

En comparant le nombre total des dentistes pour 1955 avec celui de 1954, on constate qu'il y a 52 dentistes de plus, cette année.

La proportion des dentistes en rapport avec la population est établie sur des chiffres fournis par le Bureau fédéral de la Statistique, en juin 1954. La proportion générale du nombre des dentistes en rapport avec la population s'est aggravée cette année; elle était d'un dentiste par 2790 citoyens canadiens en janvier 1954 et elle est en 1955, d'un dentiste par 2838. En tenant compte

des pronostics au sujet de l'augmentation de la population et au sujet du nombre des futurs diplômés en chirurgie dentaire, on peut dire que la proportion ira en s'aggravant jusqu'à ce que les facultés dentaires disposent des facilités pour former un plus grand nombre de dentistes.

Quelques 355 dentistes, soit un pourcentage approximatif de 6.4%, travaillent à salaire, à temps complet. En 1938, on croit qu'il n'y avait pas plus de dix dentistes travaillant dans ces conditions.

Cette année, on a enregistré un plus grand nombre de décès et de retraites; depuis quelques années, ce chiffre va en augmentant graduellement. On ne doit pas se surprendre de cette constatation, puisque l'âge moyen des dentistes canadiens est assez élevé.

TABLEAU I
CHIFFRES STATISTIQUES AU SUJET DU NOMBRE DES DENTISTES AU CANADA
(tels que rapportés par les registraires provinciaux en janvier 1955)

Province	Nombre de dentistes rapporté			Durant 1954				Augmentation ou diminution totale 1938*	Proportion du nombre des dentistes en rapport avec le chiffre de la population
	Hommes	Femmes	Total	Décès	Retraites	Déménagés	Additions		
T.-N.	31	2	33	1	0	4	5	+14	1/12061
I.-du-P.-E.	35	0	35	0	0	0	1	+5	1/3000
N.-E.	195	3	198	4	0	5	11	+29	1/3899
N.-B.	118	1	119	12	0	1	6	+9	1/4597
Québec	1278	4	1282	12	11	3	32	+405	1/3423
Ontario	2205	26	2231	27	36	9	83	+299	1/2262
Man.	264	1	265	4	1	2	7	+11	1/3125
Sask.	222	2	224	4	4	2	14	+9	1/3920
Alta.	371	6	377	3	7	6	21	+140	1/2756
C.-B.	584	6	590	7	9	8	31	+222	1/2146
Total	5303	51	5354	64	70	40	211	+1143	1/2838

Les chiffres des populations utilisés sont ceux publiés par le Bureau fédéral de la Statistique pour juin 1954.

*Les chiffres des augmentations ou des diminutions comparés à ceux de l'année d'avant-guerre 1938 sont alignés pour fin de comparaison.

TABLEAU II
MIGRATION DES DENTISTES CANADIENS DURANT 1954

A:	T.-N.	I.-du-P.-E.	N.-E.	N.-B.	Qué.	Ont.	Man.	Sask.	Alta.	C.-B.	E.-U.	G.-Brit.	Australie	Norvège	Israël	Allemagne
De: T.-N.	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	1
I.-du-P.-E.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N.-E.	0	3	0	1	0	0	0	0	0	0	1	0	0	0	0	0
N.-B.	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Qué.	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0
Ont.	0	0	0	0	0	0	0	0	0	2	2	2	2	1	0	0
Man.	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Sask.	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
Alta.	0	0	0	0	0	1	0	1	0	4	0	0	0	0	0	0
C.-B.	0	0	0	0	0	0	0	0	2	0	5	0	0	0	1	0

TABLEAU III

NOMBRE DE SPECIALISTES, PAR PROVINCE

(Seul les dentistes, qui consacrent tout leur temps à l'exercice de leur spécialité)

	T.-N.	I.P.E.	N.-E.	N.-B.	Qué.	Ont.	Man.	Sask.	Alta.	C.B.	Total
Chirurgie.....	0	0	1	1	3	28	3	0	3	6	45
Orthodontie.....	0	0	1	0	14	41	3	1	4	7	71
Périodontie.....	0	0	0	0	2	15	1	0	1	2	21
Pédodontie.....	0	0	0	0	2	5	2	0	0	4	13
Total.....	0	0	2	1	21	89	9	1	8	19	150

TABLEAU IV

NOMBRE DE DENTISTES EMPLOYES DANS LES SERVICES DE SANTE, DANS LES PROVINCES
en janvier 1955

	T.-N.	I.P.E.	N.-E.	N.-B.	Qué.	Ont.	Man.	Sask.	Alta.	C.B.	Total
Facultés Dentaires: (Personnel Enseignant)											
Plein-temps.....	0	0	2	0	9	11	0	0	3	0	25
Demi-temps.....	0	0	0	0	13	9	0	0	18	0	40
Service Hospitalier:											
Plein-temps.....	1	0	2	2	0	31	3	2	4	5	50
Demi-temps.....	0	0	0	1	0	4	0	0	0	3	8
Service Scolaire:											
Plein-temps.....	2	0	1	1	15	17	2	1	4	20	63
Demi-temps.....	0	0	3	2	6	57	1	1	2	1	73
Service de Santé:											
Plein-temps.....	1	1	2	1	1	15	3	8	0	6	38
Demi-temps.....	0	0	0	0	6	0	5	0	0	1	12

TABLEAU V

NOMBRE TOTAL DES DENTISTES EMPLOYES PAR LE GOUVERNEMENT FEDERAL
en janvier 1955

Ministère des Affaires des Vétérans.....	39
Ministère de la Défense Nationale.....	152
Ministère de la Santé nationale et du Bien-Etre social.....	8
Total.....	199

Congrès conjoint des:

**Société dentaire de Montréal
Société de Stomatologie de Québec
Société dentaire des Trois-Rivières**

aux Trois-Rivières

les 2, 3 et 4 juin 1955

★

PROGRAMME

jeudi, le 2 juin

a.m.—Inscription

Conférences, cliniques

Lunch: Société de Stomatologie de Québec

p.m.—Conférences, cliniques

Réception et dîner. Invité d'honneur: Honorable Maurice Duplessis,
ministre de la Province de Québec.

Vendredi, le 3 juin

a.m.—Conférences et cliniques

Lunch-causerie: Société dentaire de Montréal

p.m.—Golf, sports, concours, divertissements

Coquetel, buffet, représentation, danse.

samedi, le 4 juin

Conférences

Forum

Lunch. Invité d'honneur: Honorable Gaspard Fauteux, lieutenant-gouverneur de la Province de Québec.

Conférenciers

- 1) Chester Perry, Detroit, Michigan: "Prothèse"
- 2) Pierre Bernard, Paris, France: "Endodontie"
- 3) Rosaire St-Pierre, Trois-Rivières: "Coeur et circulation"
- 4) Jean-Paul Lussier, Montréal: Physiologie dentaire"

Programme des dames

Lunches, visites, réceptions, parade de modes, diners, coquetels

ÉDITORIAL

L'expérience instruit

On connaît l'affaire Ricci, de Venise, qui vient d'avoir son épilogue devant les tribunaux. Résumons. Une pauvre femme accouche, une nuit, avec l'aide d'une sage-femme. Une hémorragie post-partum se déclenche. On appelle un médecin, qui avait examiné la patiente quelques jours auparavant. Ce médecin se récusé sous divers prétextes. On mande un autre médecin, qui accepte de se rendre au chevet de la malade. On l'attend en vain durant une heure pour apprendre qu'il a chargé du cas un assistant, à l'hôpital. Cet assistant, au lieu de répondre à l'appel d'urgence, demande à une garde-malade d'appeler un autre médecin. Cet autre médecin refuse de visiter la patiente parce qu'elle demeure trop loin! En désespoir de cause, le mari se rend à l'hôpital supplier l'assistant, à qui le deuxième médecin avait confié l'appel. Cet assistant reste introuvable, occupé, paraît-il, à soigner un autre cas d'urgence. On va trouver un grand maître en obstétrique, à son domicile; ce grand maître ne veut pas s'intéresser à la patiente parce que l'accouchement a été fait par une sage-femme, qui, par surcroît, accomplit son travail sous le patronage d'un concurrent!

On transporte l'accouchée à un hôpital où le premier médecin, appelé une seconde fois, tente, en vain, d'arrêter l'hémorragie. Madame Ricci meurt aux premières heures du matin. Plainte du mari à la police. Enquête du Ministère de la Santé. Poursuites judiciaires. Condamnation à cinq mois de prison et aux frais de la cause des 2, 3e, 4e et 5e médecins appelés auprès de la malade, sous l'accusation de "manslaughter" par négligence.

Quelles leçons les dentistes peuvent-ils tirer de cette triste affaire? Plusieurs. Essayons de les résumer.

1) L'obligation morale d'un médecin ou d'un dentiste de soulager ses frères souffrants. Sans doute, il n'y a pas de loi écrite forçant un thérapeute à prodiguer ses soins à son prochain, qui les demande. Mais au nom de la morale, un dentiste ne peut refuser un traitement à un être qui souffre. L'Etat ne peut certes pas punir un membre d'une profession sanitaire qui a enfreint ce principe de morale professionnelle (quoique les juges italiens aient statué le contraire); mais l'organisme légal, de qui ce thérapeute détient une licence pour exercer, peut lui imposer une sanction, en se basant sur les règles de code d'éthique professionnelle. Une profession confère des privilèges; par contre, elle impose des obligations.

2) Un dentiste a le devoir de traiter les complications découlant d'un acte professionnel qu'il a posé. Exemple: un dentiste a extrait une dent; le patient souffre d'une hémorragie post-opératoire; le dentiste est tenu, toujours d'après ce principe de morale, de traiter son malade, sans tenir compte des circonstances de diverses natures. Si ce dentiste est dans l'impossibilité de prodiguer lui-même ses soins, il doit confier son patient à un confrère et voir à ce que les traitements appropriés soient donnés.

3) Un, dentiste, qui à cause de certains facteurs, ne peut s'occuper lui-même de complications présentées par un malade devrait référer celui-ci à un confrère-dentiste, plutôt qu'à un médecin, quand il s'agit d'une affection relevant du domaine buccal.

4) Tentons de se représenter l'état d'esprit des profanes, qui ont été mêlés de près ou de loin à l'affaire. Mettons-nous à leur place. Quelle opinion aurions-nous de la profession médicale en général? N'oublions pas que le peuple a une tendance naturelle à généraliser; un cas isolé est vite transposé en généralité. Un patient, qui a une aventure du genre avec un dentiste, devient un ennemi de la profession dentaire et réclame à haut cri l'étatisation de notre groupement professionnel.

* * *

Nous avons fait ces observations pour réveiller notre sens moral, qui, à notre époque, pour diverses raisons qu'il serait trop long d'exposer ici, a une tendance à somnoler. Aussi pour souligner l'importance de bonnes relations extérieures avec le public, qui juge toute la profession en s'appuyant sur des faits du genre, heureusement assez rares.

GERARD DE MONTIGNY.



Visiteur de marque à l'Université de Montréal

Photographie prise à l'occasion de la visite à l'Université de Montréal du docteur M. Massler, chef du département des recherches en pédodontie de l'Université de l'Illinois et une autorité reconnue dans le domaine de la dentisterie des enfants.

Accompagnaient le docteur Massler, de g.à d., L. H. Lang, secrétaire de la Mount Royal Society, Georges Perreault, assistant-professeur en pédodontie à l'Université de Montréal, Ernest Charron, doyen de la faculté de chirurgie dentaire, I. B. Hyams, président de la Mount Royal Dental Society.

Le facteur psychique dans la médecine dentaire

par le Dr med. HEINRICH MENG

Professeur à l'Université de Bâle

La psychologie d'aujourd'hui se distingue substantiellement et formellement de l'ancienne, celle qui précède l'année 1900, parce que son intérêt s'adresse avant tout aux situations vitales, telles que la constellation conjugale, fraternelle, celle de la puberté; formellement, parce que l'être humain est soumis à de tout autres méthodes d'interrogatoire, les questions portant par exemple sur la vie des rêves, les conduites fausses, les motivations profondes dans les névroses. Pulsions et caractère sont explorés dans leurs relations réciproques avec les influences lointaines d'un système de pulsions heureux ou malheureux. Les situations vécues qui naguère intéressaient au plus haut point le romancier et le poète, sont désormais prises en considération par le psychologue, par exemple la question des motifs inconscients dans le choix d'un époux.

Qu'est-ce que la psychologie médicale?

La psychologie antérieure à Freud, celle du 19^e siècle, pour laquelle le contenu médical de l'inconscient ne comptait pas (la notion d'inconscient restait discutée sur le plan philosophique), était loin de la vie. Graduellement s'est développée une spécialité: la médecine psychologique, qui est venue créer un lien entre la psychologie et la médecine, à laquelle se rattache la médecine dentaire. En tant que discipline de sciences naturelles, elle est une science voisine de la physiologie. En tant que science de la connaissance pratique de l'homme elle est la science et la pratique de l'homme, cet être qui a une conscience et un inconscient, des affects, des pulsions, une âme, un caractère, une volonté, une intelligence.

Le stomatologiste a appris à l'université entre autres matières, la physiologie normale et pathologique. On lui a enseigné par exemple les lois suivant lesquelles se déroule la vie d'un organe isolé comme de l'organisme entier. Il a été orienté notamment sur les transforma-

tions substantielles et la fatigabilité des nerfs, sur l'action adéquate ou inadéquate des excitations, sur les organes des sens et la physiologie du cerveau et l'appareil des réflexes. Peut-être grâce à la physiologie s'est-il rendu compte que l'étude des hormones et des corrélations mène à une compréhension de l'unité psychosomatique. Elle enferme comme une évidence le "principe de pilote": l'organisme est une unité globale ou, comme le dit Sherrington, une unité sociale, pour la conduite de laquelle la psyché joue le rôle important. L'écorce cérébrale est son clavier principal. Sans la connaissance du rôle directeur de la psyché, on ne peut comprendre bien des faits de corrélations comme expression de l'unité psychosomatique.

Le futur stomatologiste apprend généralement au cours de ses études quelque chose sur la signification de la psychiatrie pour la pratique quotidienne. Il est bon aussi qu'il soit au moins suffisamment au courant des données élémentaires des maladies mentales, la schizophrénie par exemple, pour être en mesure d'apprendre à déceler les malades mentaux porteurs de symptômes évidents. Ceux-ci, dans la pratique courante, sont, il est vrai, relativement rares en comparaison du nombre des névrosés. Notre question est la suivante:

Qu'est-ce que la névrose?

Les névroses sont des maladies psychophysiques de la personnalité totale. Elle sont le résultat d'un défaut d'unification de l'être avec soi-même et généralement avec le milieu. Cette désharmonie est généralement inconsciente, elle tient à des conflits de la première enfance qui n'ont pas été liquidés ou ont été insuffisamment surmontés.

Le névrosé est lié ou fixé à ces conflits. Les conflits sont partiellement conditionnés par le développement biologique normal de l'enfant humain dans sa tentative pour se développer à partir d'un état instinctif et naturel en vue de par-

venir à un état civilisé. Le conditionnement par le milieu des désordres névrotiques est, la plupart du temps, en rapport avec des pratiques éducatives erronées, imputables aux parents ou à ceux qui les remplacent dans leur tâche d'éducation. Les mauvaises conditions sociales et économiques dans lesquelles se trouve la famille, renforcent les combats intérieurs de l'âme, surtout chez les enfants très instinctifs. Parmi les pulsions, la pulsion sexuelle est la plus puissante chez l'être humain. Pourtant elle ne suffit pas pour créer une névrose. Pour qu'il y ait conflit, il faut qu'il y ait au moins deux adversaires. Dans la plupart des conflits il s'agit d'un antagonisme entre, d'une part, le *moi* qui se renforce progressivement, la conscience et les exigences éthico-sociales et, d'autre part, des pulsions, et avant tout la pulsion sexuelle, dont les premières manifestations se rencontrent déjà chez l'enfant. Les névroses les plus importantes se produisent chez ceux qui sont affectés d'hystérie, de phobies (état d'angoisse névrotique) et de névroses obsessionnelles. Les névroses sont très répandues et ce que les "internistes" disent de leurs patients n'est pas moins justifié dans la bouche des stomatologistes: plus de la moitié de leurs clients sont touchés par la névrose, que celle-ci présente ou non une base organique. Les patients appartenant à ce dernier groupe (des névroses sans substratum organique) sont de beaucoup plus nombreux que les premiers.

En outre, aux névrosés s'ajoute le nombre — qui n'est pas petit — des "caractériels," des originaux, de ceux qui souffrent d'une mauvaise éducation, des instables et parfois des prépsychotiques, qui vont chez le stomatologiste. Il doit les traiter d'une manière appropriée. Cette méthode, il l'apprend en partie dans la pratique elle-même, mais pour une autre partie il devrait y avoir été préparé par sa formation professionnelle.

Or en général, le jeune stomatologiste se trouve assez mal préparé devant les données mentales compliquées d'un certain nombre de patients. Quand il ren-

contre chez eux des résistances, il a recours à des rationalisations superficielles, telles que simulation, neurasthénie, phantasmes, sans comprendre et maîtriser consciemment les lois qui régissent le comportement inadapté du patient, alors que de toute évidence c'est ainsi que l'on procède pour l'explication des phénomènes physiologiques.

C'est ici que la psychologie médicale est d'un grand secours au stomatologiste. Il en fait son profit pour lui-même aussi bien que pour la guérison de ses patients.

Les enseignement pour la pratique quotidienne

Il est maintenant de notre devoir d'insister sur certains points de vue pratiques importants pour l'achèvement de ces recherches psychologiques, qui sont de nature à améliorer la stomatologie moderne, pour traiter les personnes bien portantes comme les névrosés. La première disposition pour un traitement efficace est une bonne relation psychique entre médecin et patient et réciproquement entre patient et médecin. Elle repose sur la confiance mutuelle.

La consommation subjective d'un traitement chirurgical, médicamenteux ou conservateur varie selon le patient. Celui qui est en bonne santé, le malade organique, le névrosé, enfants, hommes ou femmes, réagissent parfois selon les circonstances, leur manière de vivre ou leur tempérament, d'une façon paradoxale sur un traitement objectivement correct du stomatologiste. Celui-ci réussira le mieux à comprendre ces réactions subjectives s'il est capable de pénétrer l'enceinte de la vie intérieure du patient surtout que beaucoup de malades sont incapables d'exprimer ou de définir nettement la sensation, le degré ou le genre de la douleur qu'ils sentent, ni la relation de cette dernière par rapport à — par exemple — chaleur, froid ou agitation physique.

Le stomatologiste lui-même doit être psychiquement équilibré afin de donner l'impression d'une personnalité ferme, source d'une émanation psychique saine. Ceci est avant tout nécessaire, parce qu'un

patient psychiquement instable est facilement touché par la névrose au contact avec le stomatologiste.

Comme le chirurgien, le stomatologiste, doit, en plus de sa bonne technique, vraiment aimer son métier. Celui qui n'aime par son métier et en même temps ceux qui viennent lui demander son assistance — ce qui revient au même — ferait mieux de changer de profession. L'intérêt pour le malade doit aller au delà des murs de son cabinet de consultation. Le meilleur chirurgien, purement technique, qui manque de contact psychique avec son patient pendant la période qui précède l'opération ou pendant le traitement après celle-ci, est comparable au stomatologiste, qui avant et après l'opération reste psychiquement désintéressé de son malade. Ceci vaut surtout pour les cas des porteurs de prothèses. Un patient "hytérisé" de cette catégorie, chez qui tout est, techniquement parlant, dans le meilleur ordre, peut, par suite de l'opération qui amène la pose de la prothèse, souffrir d'une sorte de névrose "traumatique." Dans ce cas il devient pour soi-même, la société et le médecin un désastre, comparable à un opéré de l'appendice qui, bien que tout soit physiologiquement et anatomiquement en ordre, ne cesse de se plaindre de bagatelles, parce qu'il n'arrive pas à s'adapter au nouvel état des choses.

Problèmes du traitement d'enfants

Choisissons au hasard une question spéciale de la psychologie médicale: Comment se fait-il que bien des stomatologistes rencontrent des difficultés extraordinaires quand il s'agit du traitement d'enfants? — Du moment où le stomatologiste fait apparition dans la vie des enfants ou des tout petits, il faut compter avec le fait incontestable, que l'âme de l'enfant n'est pas "table rase." Dès son premier souffle l'enfant a fait des expériences dans le petit monde qui l'entoure. Le porteur d'une âme "avant toute expérience" — Aristote et les stoïciens la mentionnent — ne vient pas trouver le dentiste. Le stomatologiste doit s'attendre

de trouver dans l'enfant une âme qui a déjà subi une sorte de prétraitement, surtout par ceux qui sont chargés de son éducation. Les expériences avec son entourage ainsi qu'avec son "moi" n'ont pas manqué de mouler une "pré-forme" de caractère en tant que blindage de faits psychogénétiques et pédagogiques.

Pendant les premières années de sa vie, l'enfant ne présente pas encore une conformation physique définitive dans le sens de Kretschmer, qui ne se prononce que plus tard, bien qu'on constate parfois des indices et des tendances de développement dans le sens de cette conformation future. Ces indices peuvent, entre autres nous servir de points d'appui pour pénétrer un peu le monde psychique constitutionnellement existant; ils laissent présager des difficultés de rapport avec l'enfant qui, par exemple, incline fort à la schizothymie, difficultés qui pourront éventuellement être évitées par la suite. Plus notre petit patient sera psychiquement accessible et plus nos rapports avec lui seront facilités. Dans la pratique la définition de la phase de développement que traverse l'enfant s'avère très importante. Il peut être décisif, si le petit patient traverse une crise intensive de croissance, qui le rend plus sensible que d'habitude, ou s'il est, par exemple, dans la période du premier étirement (5 à 7 ans). Quand on rencontre des difficultés de rapport, il est évident que dans ces cas ce sont des influences conditionnées par l'éducation familiale qui se font sentir. Enfants uniques, illégitimes, ceux qui ont perdu leur père (ou mère), enfants légitimes de parents sains avec des frères ou soeurs, — tous réagissent d'une façon différente sur les influences du monde extérieur pendant leur phase éducative normale, par exemple pendant la période dite d'entêtement (3e à 5e année).

Dans la plupart des cas le stomatologiste fait la connaissance de l'enfant quand ce dernier a dépassé cette phase. Les deux premières phases de la vie enfantine (celle après le sevrage et celle de la crise affective et "d'entêtement")

créent des conséquences psychiques qui, par suite d'une éducation erronée, peuvent produire des angoisses de caractère névrotique. De toute manière le stomatologiste doit s'attendre à rencontrer chez l'enfant de 6 à 8 ans des réflexes qui sont susceptibles de causer des difficultés dans le traitement dentaire.

Dans les cas où le stomatologiste, tout en procédant correctement en ce qui concerne le côté psychologique du traitement, rencontre des réactions fâcheuses au moment de l'opération, (surtout quand le patient traverse une des phases critiques) il ferait mieux de se procurer des détails de l'anamnèse, pour voir clair. La question se pose ainsi: Quelles sont les circonstances valables a) pour l'enfant, b) pour son entourage, qui conditionnent cette réaction inadéquate par rapport à l'excitation? Une explication, comme par exemple celle que le petit patient subit une éducation erronée et se trouve tout le temps psychiquement infecté par un entourage névrosé — guidera l'attitude du stomatologiste.

Voici quelques indications seulement:

1) Le cabinet du stomatologiste n'est pas fait pour donner une éducation supplémentaire, même quand les parents le désirent.

2) Quant l'enfant est mal élevé et se montre récalcitrant, ce n'est pas l'affaire du stomatologiste de le punir.

Il devra essayer de l'associer à son traitement. Les résistances principales sont des réflexes conditionnels provenant de situations antérieures et psychiquement réactivés lors de la consultation.

L'expérience démontre qu'un réflexe conditionnel est le mieux éliminé par un autre réflexe conditionnel, plus tard par l'élimination d'automatismes nuisibles. Si l'enfant vit la rencontre avec le stomatologiste d'une façon inadéquate, c'est dans la plupart des cas une compensation d'un ancien épouvantail auquel sont liés des réflexes conditionnels. Modèle: saint Nicholas. Il serait inutile de punir pour en triompher. De l'humour, une parole énergique, mais pas autoritaire, pourront

souvent être utiles. Élimination de sources d'angoisses, comme des mères craintives, éviter des traumatismes caractérisés par un choc de déception, (par exemple: "ça ne fait pas mal!" — et après ça fait mal quand même!) pourront rendre inefficaces des réflexes angoissants même chez des enfants névrosés. Le petit être humain "va" aux plaisirs, il les cherche, le plaisir d'être courageux, celui de l'approbation par le stomatologiste, le plaisir matériel d'une friandise ou d'un jouet, qui sont prêts pour lui après l'opération. Des faits comme par exemple celui d'avoir fait le petit patient "associé" dans l'entreprise du traitement, (en tant que destructeur du mal de dents, de la douleur), le sentiment que le stomatologiste l'aime bien et ne menace pas de le mettre à la porte, peuvent se transformer en sources de plaisir.

Celui qui se trouve dans un état de ressentiment ou d'opposition contre soi-même ou le monde, sera trop irrité par les complexes d'opposition ou d'entêtement de l'enfant et il sera par conséquent ou trop dur ou trop indulgent. Une parole sévère mais nette, qui pourtant laisse deviner la bonté et la bienveillance, pourvu que celle-ci soit vraie, peut être aussi juste comme méthode que celle de renvoyer l'enfant s'il n'est pas traitable momentanément.

Un sain rapport psychique allège bien des angoisses; il facilite la catharsis de l'enfant psychiquement angoissé ou entêté. Punir ne crée pas l'autorité. Tout d'abord il faut avoir cette autorité afin de pouvoir gagner une influence sur le comportement du petit partenaire. Il est juste de traiter l'enfant comme s'il était déjà plus mûr qu'il ne l'est en réalité. Il est prouvé à quel point l'image du père ou de la mère, ressuscité dans les rapports avec le (ou la) stomatologiste, impressionne parfois l'enfant dans son attitude ultérieure vis-à-vis de l'autorité, de l'angoisse et de la douleur. Trouver ici la juste conduite est une fonction autant pédagogique que psycho-hygiénique du stomatologiste.

(à suivre)

Journal

OF THE CANADIAN DENTAL ASSOCIATION

A philosophy of an organized profession*

by P. G. ANDERSON, D.D.S., F.A.C.D., Toronto

Some aspects of our professional life and patterns are inescapably associated with the standards by which our profession and all professions are appraised.

It is not by mere accident or co-incidence that there exists a spirit of integrity that has given character and substance to our profession for so long a time, that is as vital in so many respects as the practice of a profession. Practice is essential, honourable and necessary, for that is the means by which we live. But practice alone does *not* set the total standards of value by which a profession lives or survives among professions.

Though we probably do not display our sentiments too freely, we are in reality all grateful for our distinguished men in industry, in finance, in politics, in religion, the professional men who have helped to guide the precious destinies of

our respective professions and particularly our own profession in dentistry. Our profession has been made and held honourable by the many devoted and capable men who have laboured so hard to achieve the purposes for which our profession stands.

I am certain that in your sure judgment you would agree that all that we are today is dependent upon the work and efforts of our predecessors and of learned men in every sphere of activity and every age, but it is an idle pride that lives only on the achievements of the past. Our professional ancestors have passed on to us standards of value based on accumulated experience, and these standards have become a part of the spirit of dentistry. Therefore, it is important that we rescue some of the ideals of the past and use them in charting the course for the future. With this belief and with the belief that unity and peace and harmony should be sought by our profession, just as by nations, we all know that one way of finding them is to work together, and to learn more about our profession of

*This presidential address in abbreviated form was delivered to the Annual Meeting of the Canadian Dent. Assoc. May 16, 1955.

dentistry together. This is our aim in the Canadian Dental Association.

Now, what about dentistry as a profession! What are the ultimate objectives in our profession? Are they capable of persisting and lasting in a constantly changing world? Does it matter? Do we care? President Robert E. Doherty of Carnegie Institute posed this question:—"To what end will professional men direct their energies and abilities?" Is dentistry, as a professional group, ready to answer that one? Further, President Doherty went on to advance the thesis that "under the North American system professional men largely set the pattern of national life. The character of their pattern depends not alone upon their technical ability, nor yet upon whatever ability they may have in dealing with human and social situations. It also depends, and depends critically, upon their attitudes, upon the way they look at things. These attitudes have some of their principal roots in value judgments." I am sure, if I were to add nothing more in this presentation, but left with you this perfectly simple but challenging observation, you would have ample cause to be concerned as to where and to what purpose professional men are heading and why. This is a terrific challenge to place on the door mat of any profession. It would be so much easier just to think about it—some other time—but let's face it, we cannot escape—it is there and sometime or somehow it *will* be answered. It cannot be assigned to a committee or executive for disposition. It is through a profession or professions by which the answer will come. By the simplest form of deduction, it would appear that dentistry must know its objectives in order to make proper use of its energies and abilities.

Members of the dental profession are a privileged group. No one would deny that, because they have been exposed to all the benefits of an advanced education, admittedly scientific in nature, but nevertheless in an atmosphere of knowledge. Gilbert Highet of Columbia University,

and formerly of Glasgow and Oxford, an eminent authority on education and teaching makes this observation: "An error which limits the use of knowledge in the Western world is the *notion* that learning and teaching always ought to have immediate results, show a profit and lead to success. It is true that education is intended to benefit the *entire personality*. But it is not possible, not even desirable, to show that many of the most important subjects which are taught as part of education will make the learner rich, fit him for social life, or find him a job. *It is the entire personality that counts*. A training in philosophy makes few men wealthy, but it satisfies an instinct in them which cries for fulfillment. The man who does not know anything about biology is in that respect inferior to the man who does even though he may be richer in pocket." Similarly then, the man who does not know anything about the art and science of dentistry is in that respect inferior to the man who does even though he may be a much richer and a more influential man in other respects. This aspect should satisfy the pride of dentists in their profession. But education is intended to benefit the entire personality as well as train specifically, so that it was probably at this point that President Doherty of Carnegie Institute was prompted to ask: "To what end will professional men direct their energies and abilities?"

Let us consider professional men as a group. The lawyer sees his client only when the client is in trouble and needs legal advice, but he rarely sees the client regularly over a lifetime, or, as with us, twice a year. The doctor sees his patients when they are sick, but the patient will go for years without medical attention, although regular visits to the physician are being urged especially for the middle-aged and older person who lives in a world where the tempo is fast becoming accelerated. The engineer sees those who work for him and with him, but he does not have regular visits with units of families who may approve or disapprove of his deportment. The architect sees

even fewer people than the others. The teacher—probably the most significant of all the professions—has a profound impact on the life of the child and young man, but he loses touch when the boy graduates. The dentist, however, is in contact with the child, the boy or girl, the husband and wife, the father and mother, the family throughout their entire careers. What influence, what impression, what stimulation has he left with them? Is it only that he or she was a skilled technician? Or has he left something of himself—a professional man or woman, possessing an advanced degree of educational standard—that would label him not only as an able diagnostician and skilled operator, but as well—as Highet has so tactfully described it—an entire developed personality that would in the name of dentistry help develop well, *a pattern in our national life*.

Outside the clergy there is no profession where people are so constantly in contact, over so long a period of time and so regularly as in the dental profession. The dental public health slogan—"See your dentist twice a year"—has just about achieved its goal and thousands upon thousands of families across Canada and the United States do just that, but are we just going to offer them technical knowledge alone? Or are we going to offer not only highly developed masters of the art and science of dentistry but as well *entire personalities* that by virtue of the fact they have been provided with the qualities of the mind that have made them professional men—graduates of schools of learning—university men and women—they are equipped to assist their less fortunate brothers to weigh the consequences of acceptable or rejectionable decisions.

It is high time that professional men and women—of all professions—graduates of universities—make known their abilities, make felt on society the influence and wisdom of their advanced education and stop trying to ape the material artists by trying to impress society with

dollars and cents as a substitute for wisdom and prestige.

All of this in reality means that the dental professional man, because of his advanced degree of educational training, and because of his close contact with the public is in a preferred position among professional men to have a profound influence on the pattern and the thinking of national life.

In our profession we have many men and women who by their splendid example of scientific knowledge combined with the qualities of citizenship and the faculty of knowledge that has made them a complete and developed personality, their judgments are sought, their opinions are respected, and society or the public has placed them among the spirited servants of its time. Isn't it fair to ask "can't we have more?"

If I were sitting where you are the first question I would want to ask is—"Well, how do you think you can change or improve all this?" In my immaturity I cannot tell you, but the critics from every sphere of life have given us the answer, it is simply EFFORT. Now what can we ourselves do in respect to this matter of effort? Obviously, the whole issue of our human destiny or fate comes back in the end to our own individual selves. No matter how much we are influenced by the institutions and customs of our times, there is in every one of us a margin—a little to spare, as it were—for individual initiative and effort. That is why we individually get along. But one thing is certain, that the sum total of all these margins for initiative and effort can make the difference between a profession bounded only by the limits of its own professional thinking, or a profession (or profession as a group) headed for a world of creative achievement.

We are aware of the fact that we are all living in a constantly changing world. If in grandfather's time you had said you flew through space faster than sound, you would probably have been called a liar. If you had said you witnessed an ex-

plosion so great it killed every living thing within ten miles, you would be called a so-and-so of a liar, but if you went so far as to say you had heard voices from across the other side of the world just as soon as they were spoken, you would surely have been committed to an insane asylum at once. These are changes in a changing world; but with these changes come so many other changes in man's stature in society. Science has pretty well won man's struggle with nature, but in doing so it has left him with a feeling of insecurity, a feeling of not having control of the machines of his own making, of not being the master of his own fate. The result is that more and more people turn to governments and administrative agencies to assume the burdens and responsibilities that less than fifty years ago were considered as personal.

Now this pattern of behavior should not be considered too unusual at all. Dr. Overstreet has pointed out, that every individual first faces his problems of security and personal importance while he is still a helpless child. His efforts to get what he wants are made long before he enjoys either independence or competence. His efforts, therefore, are directed at getting other people to give him what he wants. Thus, at the most vulnerable time of his life, *he faces a danger of establishing habits of successful dependence upon other people*, so that he never finds a sufficient motive for growing into mature responsibility: Or, on the other hand, he may experience so much frustration that his natural drive toward independence is replaced either by acceptance of whatever happens or by an intensive resistance. So today, the worker or any person has the benefit of baby bonus, unemployment insurance and old age benefits, and when applying for a job he wants to know—how much am I paid, what insurance benefits do I get, what sickness and accident benefits accompany my position, what holidays with pay, what retirement allowance and a

host of other conditions. He simply wants to feel safe because he feels insecure in this changing world. Bertrand Russell commenting on man's present-day reactions in our western world makes this observation: "Nothing has so beneficent an effect on human beings as security."

With these changes, governments seek to relieve man of his insecurity. The result is that social legislation takes on many peculiar forms and we find there are those who would seek to introduce changes in the way we handle our services to the public, and that includes dentistry. These men are not all crackpots. Their arguments are not all biased or spiced with political appeal; they are simply running apace with the trend of the times. But one thing is certain, that if we persist in treating them as disturbers of the peace, as unreasonable and prejudiced individuals, we will never succeed in getting the help, the co-operation and the guidance of capable, informed and reasonable people of the state in our effort to improve our services to the public.

With this trend in government agencies everywhere, to provide security to all ages from the "cradle to the grave", and with readiness of people everywhere to accept these benefits, let us be realistic and face it that the *threat* of some form of health insurance, socialized health services, or call it what you will, *may be* just around the corner. Don't misunderstand me—I said "*threat*" and "*may be*" just around the bend, but one thing is certain, that so long as this trend continues—there is no sign of it ending—somewhere, somehow, or by some means greater service in our dental care is going to be urged if not demanded by people everywhere.

It would appear that so far the efforts of the dental profession to control dental disease have in reality not been too successful. It is true the techniques have improved tremendously, diagnosis and treatment planning have improved, the public relations and professional relations

have improved so very, very much, but let us not fool ourselves—dental disease—that is decay and pyorrhea—rolls on at as great a pace as ever. It is estimated that only between one-quarter and one-third of the people of Canada receive anything near adequate treatment. This is a regrettable situation, and some would say give us more dentists. That is what the public says. There is no doubt about it, we do seriously need more dentists, but do we really, seriously believe that more dentists are going to have a profound effect on the control of dental disease? Is not the factor that has the control of dental disease going to be the thing that will actually prevent the disease from taking place in the beginning?

You will recall that in medicine it was not because of more doctors that smallpox, diphtheria, diabetes and other conditions were made controllable; it was because through research and through men and funds being made available for research that those diseases were brought under control. Wouldn't it be a happy situation if in Canada we could have staffs of men working on planned projects of research for the control of dental disease rather than working on the control of health insurance legislation? It is indeed a striking observation when we see that in Canada we only have one dentist in every 150, devoting even any time to research, while in medicine the average is one in twelve. In New Zealand, where for twenty-five years they have had a form of health legislation whereby female technicians are trained to perform dental operative work on young patients, and I might add very efficiently too—it was observed during the last war that New Zealand had one of the highest percentages of decayed, missing and filled teeth of any country in the world. It would appear that *treatment*, though terribly important to us now to help cope with our situation, is *not* the ultimate answer to dentistry's greatest problem—dental disease.

I am not a research worker, but as I

observe the patterns by which health insurance or legislation for health services of any nature has been introduced in any of the countries, I cannot help but feel that these emergencies or services, only meet a situation brought about by demand by the people, and do not reach out by any means to touch at the real cause of our dental problem. If even a portion of the monies spent on legislation for health services in many of these countries where they have health insurance programmes, were spent on plain ordinary, controlled, and directed research, I feel so confident, so sure, that like the experience of medicine, dental disease would be brought within some measure of control within the next fifty to seventy-five years. Treatment will just not bring about the "know why or know how" of dental disease, and treatment is only a measure of appeasement in dentistry's problem, and in this critical health problem of the public, and of people everywhere.

And so, we find that in dentistry, as in other professions, there are problems that are forever challenging the very structure of our existence. The greatest professional vice is indifference or the "Let George do it" idea. The greatest professional hazard is complacency. In the beginning of this talk I made the observation that our professional ancestors have passed on to us standards of value, based on experience that have become a part of the spirit of our profession. I mentioned, too, that it was important that we rescue some of the ideals of the past, and use them in charting the course for the future. And so then to what end *are we* directing our energies?

The case for the professions does *not* rest essentially on their numbers, or their techniques, or their balance sheets, or their administrations. The case rests *primarily* on the men and women of our profession and of all professions to use their individual vision, their individual wisdom, and their individual efforts to set the pattern and in so doing, chart the course for our profession, and for professions for the future.

A study of tissues treated with antiformin - citric acid

by H. A. HUNTER, D.D.S., M.Sc.D.*

Recently a number of papers** have been published reporting on the use of antiformin in periodontal therapy. These papers included a technique for the use of antiformin in the oral cavity, a list of its therapeutic properties, and testimonials to its efficacy in the treatment of periodontal pockets—and more specifically in the removal of epithelium from the periodontal pocket wall. The following claims have been made for this particular treatment:

- (a) Dissolves micro-organisms. (1)
- (b) Tends to soften tartar. (1).
- (c) Dissolves necrotic tissue. (1).
- (d) Hydrolyses pocket epithelium. (1).
- (e) Has a styptic action. (1).
- (f) Is a specific epithelial solvent. (1).
- (g) Is self-limiting in action. 1,3).
- (h) Travels along lymphatics at times.(4).

One of the papers⁽⁷⁾ dealt with chemical reactions purported to be involved in this form of therapy.

Hecker⁽¹⁰⁾ in 1913 described antiformin as a specific epithelial solvent. He reported that the removal of epithelium "is generally accomplished with an acid solution or by a normal solution of potassium hydroxide (40 grams in 1000 c.c. of distilled water). The author has secured the best results by the use of antiformin. Draw into the pipette a very small amount (not over 2 drops). Carefully pass the pipette into the pocket and with a side to side movement discharge its contents into the deeper portions of the pocket. Allow either the potassium hydroxide or the antiformin to remain in the pocket from 1 to 3 minutes, after which time neutralize with N/10 hydrochloric acid solution. After the hydrochloric acid solution has been placed in the pocket it is swabbed

out with a pledget of cotton twisted on a broach. When the treatment of the pocket with the alkalies and the acid is completed, a cataract knife is passed into the pocket and the adhering fibers of the periodontal membrane which form the boundaries of the pocket are loosened and cut."

The modification in technique recommended by Box⁽¹⁾ was to substitute 5% citric acid for N/10 hydrochloric acid as outlined by Hecker.

The Merck Index⁽⁹⁾ describes antiformin as follows: "A strongly alkaline solution of sodium hypochlorite; 100 c.c. contains 5.68 gm. active Cl, 7.8 gm NaOH, 32 gm. Na₂CO₃. Yellowish, clear, liquid, odor of hypochlorites. Use: Germicide, disinfectant, deodorizer. Sterilizing hands and instruments; disinfecting wounds, etc.; also in skin diseases; test for tubercle bacilli in sputum. Applied EXTERN. as a 2-10% dilution; for demonstrating tubercle bacilli, 15% dilution."

Bastedo's *Materia Medica*⁽¹⁴⁾ states: "Antiformin is an alkaline hypochlorite used to dissolve tissue, blood, pus, and mucus in the examination of sputum for tubercle bacilli."

Antiformin is one of the alkaline sodium hypochlorite solutions, concerning which Accepted Dental Remedies⁽¹¹⁾ states in part: "Properties: a clear, pale greenish-yellow liquid having an odour of chlorine. Action and Uses: This solution is not suitable for application to wounds or areas of infection in the soft tissues. However, its use in double strength for irrigation of root canals because of its solvent action on pulp tissue and organic debris has been recommended (Grossman, L.I. J.A.D.A. 30:1915, Dec. 1943). A solution of sodium hypochlorite is useful to clean dentures."

Grossman and Meiman⁽¹²⁾, working in the field of endodontics, in searching for a quick general solvent for dental pulp

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**See References—numbers 1-8.

tissues, concluded that double strength chlorinated soda, which is a very strong solution of sodium hypochlorite, was the fastest of any they tried. It would completely dissolve an extirpated dental pulp in as little as one hour. They reported that potassium and sodium hydroxide and sulphuric acid took upwards of twenty-four hours to accomplish the same thing.

Accepted Dental Remedies⁽¹¹⁾ lists further properties of alkaline hypochlorite solutions, which are quoted in part as follows: (They) "have a destructive action on most bacteria and other organic matter. Excessive alkalinity in hypochlorite solutions used in the treatment of infected wounds may cause destruction of normal tissue and irritation of the skin and is therefore objectionable."

The above quoted authorities give substantial proof of the destructive powers of the alkaline sodium hypochlorite solutions on organic tissues.

Walker⁽¹²⁾ in discussing solvents for organic remnants in root canals claimed that double strength chlorinated soda was not only an organic solvent, but a powerful germicide as well. He mentioned that it had no apparent ill effect on living tissue, but no evidence was presented to substantiate this claim.

The apparent conflict in respect to many of the claims prompted the present study which was aimed at a histological evaluation of the early effects of antiformin-citric acid therapy applied to various tissues.

MATERIALS AND METHODS

The pH of samples of antiformin* was determined by use of a glass electrode potentiometer and found to be pH 12 ± 0.05 .

A "U-shaped" area of skin about 1 cm. square was reflected on the back of an anaesthetized guinea pig. The raw surface of subcutaneous connective tissue devoid of epithelium was given the pre-

scribed treatment outlined for periodontal pocket therapy⁽¹³⁾; viz. 2 drops of full strength antiformin for 2 minutes followed by neutralization with an excess of 5% solution of citric acid.

A loop of guinea pig ileum was isolated onto a piece of gauze while still functioning as part of the animal's alimentary canal. Antiformin was placed on the peritoneal covering of the bowel and allowed to act for 2 minutes.

The buccal mucosa of the same guinea pig was treated similarly with antiformin.

Two human periodontal pockets were likewise treated with antiformin-citric acid.

In all cases the tissues were excised immediately following completion of treatment. Thus immediate action of the treatment could be observed without the masking effect of inflammation. Sections were cut to show, in the first instance a cross-section of subcutaneous tissue of the guinea pig; secondly, a cross section of the bowel to demonstrate penetration of the tissues, and thirdly, a cross-section of the cheek tissues. The two human cases were cut in cross-section to show gingival tissues from the pocket side to the external gingival surface. Control tissues were included in each of the above human cases and the experimental animal tissues.

OBSERVATIONS

In the section taken from the subcutaneous tissue from the back of a guinea pig, (see Figure 1) shrinking of the nuclear substance of the fibroblasts was observed. The chromatin had assumed a central position within the pyknotic nuclei with, in some instances, a few strands of radially arranged chromatin extending to the nuclear membrane. The nuclei of muscle cells were similarly affected. The bundles of collagen were discernible but less distinct than in a control section. Blood vessels exhibited a granular coagulum within the lumina with no intact erythrocytes. The histological appearance was one of necrosis and lysis. The changes were most severe ex-

*Samples were obtained from the J. F. Hartz Co. Ltd., Toronto and from Shaw Research, Omemee, Ontario.

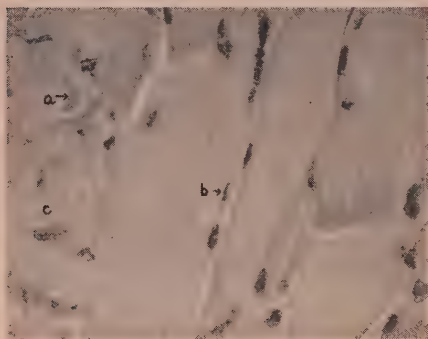


FIG. 1. Guinea Pig Subcutaneous Tissues.

- (a) Shrunken chromatolytic fibroblast nucleus.
- (b) Chromatolysis of striated muscle cell nucleus.
- (c) Collagen bundles are less distinct than in control specimen.



FIG. 2. Human gingiva treated with antiformalin.

- (a) Shrunken chromatin in epithelial nuclei.
- (b) Deep tissues appear relatively less altered.
- (c) No recognizable sharp line of demarcation between affected and unaffected deep tissues.

ternally with progressive diminution as depth increased. No line of demarcation between normal and affected tissue was seen.

In the sections of guinea pig ileum the nuclei of the muscle cells were paler and the chromatin shrunken (see Figure 4). The cytoplasm was paler and the cell boundaries were indistinct, but clear enough to indicate orientation of the muscle cell. The epithelium of the inner

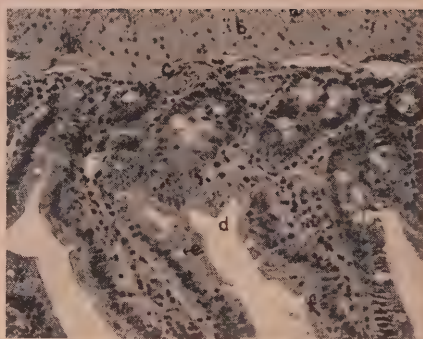


FIG. 3. Guinea Pig ileum—Normal Control.

- (a) Serous membrane.
- (b) Smooth muscle coat.
- (c) Lamina propria with many lymphocytes.
- (d) Crypt of Lieberkühn.
- (e) Goblet cell.
- (f) Simple columnar epithelium covering a villus.



FIG. 4. Guinea Pig ileum with antiformalin.

- (a) Chromatolysis of smooth muscle cell.
- (b) Separate muscle fibres becoming indistinct.
- (c) Chromatolysis of epithelial cells.
- (d) Epithelial cell membranes indistinct.

lining mucous membrane of the bowel showed severe alteration; the nuclei were barely discernible with very pale staining chromatin. The outline of cell membranes was largely lost, so that the cells blended into an almost homogeneous mass of granular debris. A striking feature was the involvement of cells through the entire thickness of the tissues. This was



FIG. 5. Guinea Pig Buccal mucosa treated with antiformin low power.

- (a) Rectangle outlines high power area seen in Fig. 6.
- (b) Keratinized stratified squamous epithelium.
- (c) Germinal epithelium.
- (d) Connective tissue lamina propria.

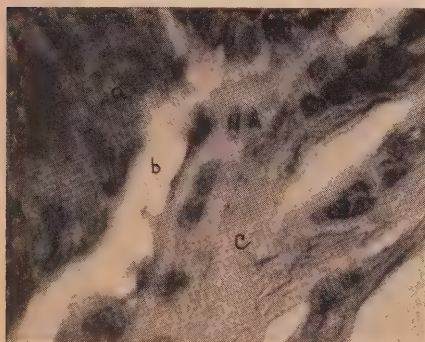


FIG. 6. Guinea Pig Buccal mucosa. High power magnification of area boxed in Fig. 5.

- (a) Lysis of epithelium.
- (b) Artefact.
- (c) Lysis of connective tissue.

interpreted as an overall necrosis and lysis of the involved tissues.

In the guinea pig buccal mucosa sections of the epithelial nuclei appeared to be destroyed first, then the cytoplasm and the tonofibrils. Some fibroblastic nuclei showed the same changes as were observed in the guinea pig subcutaneous

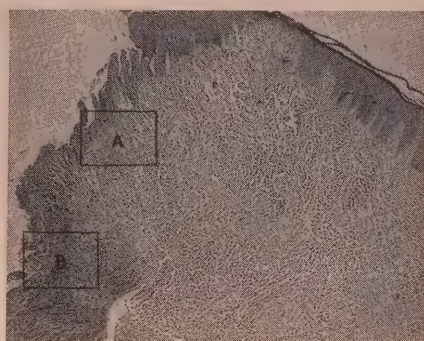


FIG. 7. Human gingiva treated with antiformin—low power.

- (a) Periodontal pocket side.
- (b) Area A.
- (c) Area B.

tissues. The degree of involvement of connective tissue was, however, much less than in the bowel specimen.

The reactions in the human gingival biopsy tissues showed that both the pocket epithelium as well as the underlying connective tissue were destroyed (see Figures 8 & 9). This destruction penetrated some distance into the gingiva and there was no distinct line of demarcation from treated tissues. In areas of the gingiva covered by thick keratinized epithelium, the deeper layers of epithelium appeared to be less affected. Again it was noted that involvement of connective tissue underlying this epithelium was minimal.

DISCUSSION

From the above histological findings and the pertinent data quoted from the literature, the claims made for this form of therapy can be evaluated. The first four points: *i.e.* dissolves micro-organisms, tends to soften tartar, dissolves necrotic tissue, and hydrolyses epithelium are functions of alkaline sodium hypochlorite solutions which can be explained by their general solvent properties of organic tissues—see Grossman and Meiman⁽¹²⁾.



FIG. 8. Area A of Fig. 7

- (a) Remnant of epithelium.
 (b) Advanced lysis of both pocket epithelium and underlying connective tissue.



FIG. 9. Area B of Fig. 7

- (a) Similar reaction to that in Fig. 8, but situated deeper in the pocket.

No evidence to date has ascribed a solvent property limited to necrotic tissue, to any of the hypochlorite solutions.

Styptic properties were not amongst those listed in the literature, nor are they substantiated by the published clinical reports.

The original claim for antiformin's specific solvent action on epithelium appears to originate with Hecker⁽¹⁰⁾, but he offered no corroborative evidence to support his statement. The quotations from the literature cited and the histological observations given above do not support this view. A recent article by Shaw⁽⁷⁾ has offered an explanation for the selective action of antiformin on the epithelial lining of periodontal pockets on the basis that epithelial proteins have a characteristic cystine or disulphide linkage that is not found in the corium and most other proteins of skin. This disulphide bond is the weak link by which hydrolysis can take place. He explained the process of the selective rate of hydrolysis of keratin as follows: "the rate of hydrolysis of keratin is increased over ten times, while that of corium is negligibly affected until a pH of 13.8 is reached when corium also rapidly hydrolyses." If these are the con-

ditions by which keratin is hydrolysed much faster than adjacent mesenchymal tissues, the solution used must be maintained within the pH range of 12.8 – 13.3. It was found, however, that the two proprietary specimens of antiformin purchased for testing, (one dispensed by J. F. Hartz Co. Ltd., and the second manufactured by Shaw Research) had pH of 12.0 ± 0.05 . According to Shaw, neither of the above samples would appear to be operative within the stated selective range, but rather at a level where hydrolysis of the keratin and corium was claimed to be quite uniformly low⁽⁷⁾.

The lack of demarcation between normal and affected tissue suggests that the property of self-limitation referred to by Robb⁽³⁾ is dependent only on exhaustion of the drug by dilution. The lack of supporting evidence and the tenuous claims made for the selectivity of this drug are exemplified by the following quotation from one of the papers⁽¹⁾: "as far as is known, without adequate laboratory experimentation, the action of antiformin is almost specifically limited to the epithelial structures connected with the pocket." The last claim made that: "certain clinical evidence indicates that at times it

(antiformin) will travel some distance along lymphatics¹⁷⁽⁴⁾ was not substantiated.

CONCLUSIONS

The study of histological sections of guinea pig and human tissues treated with antiformin and citric acid revealed the following:

1. All soft tissues treated by the antiformin showed evidence of necrosis and lysis.

2. No evidence of a selective epithelial solvent action was demonstrated for antiformin.

3. No distinct line of demarcation between normal and affected tissues could be visualized.

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The rationale of endodontics as a surgical procedure*

by M. B. AUERBACH, D.D.S., F.A.C.D.

Endodontics has grown in stature to the point where it is accepted as an autonomous branch of clinical dentistry which is concerned with the care of teeth with involved pulps. The objective of Endodontic treatment is to maintain these teeth in the mouth in a healthy, functioning condition. This growth of Endodontics is justified. There is an increasing public demand and need for Endodontic treatment. There is an increasing body of knowledge to be imparted to those who are to practise Endodontics. The necessary techniques and skills require specially-trained men and specially-

adapted methods to teach them. Finally, there is a steadily enlarging group of men who see fit to devote their professional lives to the practice and teaching of Endodontics.

We know that the treated tooth is not a "dead tooth." The question of metabolism in the enamel and dentine is being investigated in both normal and pulpless teeth. However, we do know that the cementum retains its physiologic function following Endodontic treatment as a fact which has been repeatedly demonstrated. The cementum is a tooth structure which has the least physiologic relationship to the pulp—it is tied up with the physiology of the periodontium. In a treated tooth the cementum continues to deposit new layers of tissue. It continues

*Essay Presented at the Midwinter Meeting of the Chicago Dental Society, February 1955.



A — Pre-Treatment Radiograph



B — Post-Treatment Radiograph



C — Checkup: 13 months

FIG. 1

to function as a connection between the tooth and the periodontal tissues. This maintains the integrity of the epithelial attachments and the dynamic adjustments of the periodontal membrane to tooth movement during mastication.

With the cementum alive and performing its reparative function, with the periodontal membrane intact, the treated tooth is a live, functioning member of the masticatory apparatus. The properly-treated pulpless tooth can perform all the functions of a normal tooth.

Having decided that a treated tooth continues to perform its function, the question of its state of health in relation to its host must be considered. Does a treated tooth remain in the mouth as a healthy member? In our opinion the answer is, yes. This opinion is based on clinical and roentgenographic evidence gathered from thousands of treated teeth checked over long periods of time.

In Fig. 1A, we have a radiograph of a tooth with a periapical area. Let us retrace the sequence of events which re-



A — Pre-Treatment



B — Post-Treatment



C — Checkup: 6 months

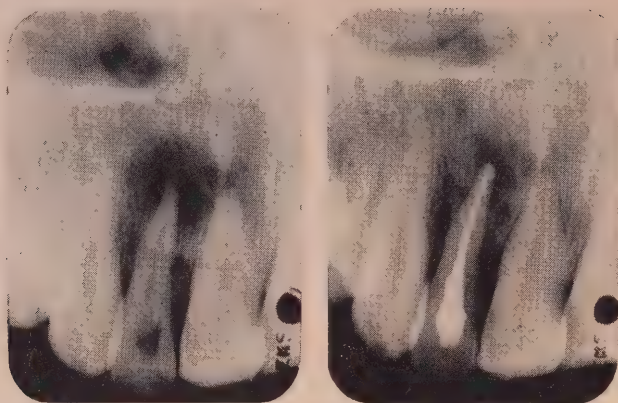
FIG. 2

sulted in this lesion to the periapical bone as manifested on the radiograph as a radiolucent area. Due to the presence of an irritant (a cavity, trauma, chemicals, heat, etc.) the pulp of this tooth responded with an inflammation. An inflammatory exudate developed, which began to feed out through the periapical foramen into the periapical tissues. This inflammatory exudate acts as an irritant to the bone, causing the liquefaction of the bone, as shown on the radiograph as a periapical area of translucency. The periapical

area is due to the irritating contents of the root canal.

One way to deal with a tooth such as this is extraction. When a tooth such as this is extracted, and a new radiograph is taken a few months later, one finds that the area has cleared up, new bone has filled in, and the tissues are considered healthy once more.

This sequence of events is an every-day occurrence. The extraction of the tooth removes the cause. With the cause removed, the periapical tissues repair. By



A — Pre-Treatment
Vitality Test
Lateral Incisor: Non-Vital
Central Incisor: Vital

B — Post-Treatment



C — Checkup: 6 months

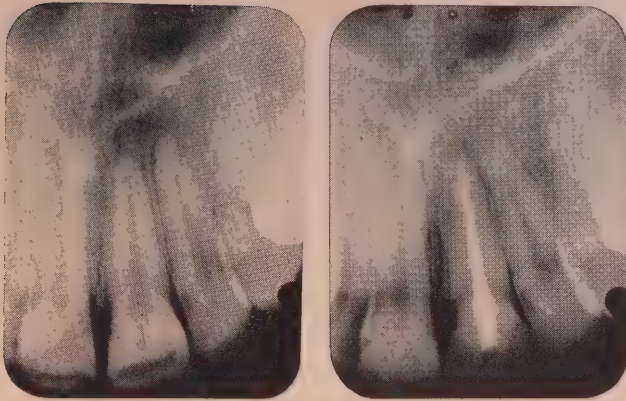
FIG. 3

removing the cause, we have placed the periapical bone in an environment in which it can heal itself.

The cause of the periapical pathology, however, is not the tooth—rather it is the contents of the root canal. Extraction in this case is a radical procedure, in that we had to remove the entire tooth in order to eliminate the contents of the root canal.

If Endodontics is a rational procedure, we should be able to remove the contents of the root canal, remove the cause of the periapical area, and have the periapical area clear itself without the necessity of removing the tooth (Fig. 1,B,C.)

Endodontics is a surgical procedure which removes the cause of periapical pathology, allowing the periapical tissues to heal themselves. The dental profession accepts the radiograph as evidence of the presence of pathology. To be consistent and logical, then, absence of radiographic evidence of pathology, particularly following a surgical procedure such as Endodontics should be accepted as evidence of health. Tissue, especially bone, will not tolerate the presence of pathogenic microorganisms or toxic materials. When these irritants are present, inflammation results and the roentgenogram reveals it as a translucent area at the apex. A large



A — Pre-Treatment Central Incisor: Non-Vital
Vitality Test Lateral Incisor: Vital

B — Checkup: 21 months FIG. 4

percentage of teeth with properly treated pulp canals, remain functional, comfortable, and radiographically negative and should be accepted as proof of the scientific basis of modern Endodontics.

Having discussed the question of treating teeth and having them remain in the mouth as healthy, functional members of the masticatory apparatus, the next question to consider is: What teeth to treat?

Modern dental practitioners are practising full mouth rehabilitation. In doing so, I believe that they subscribe to the following principles:

That a patient's natural tooth is preferable to an artificial restoration.

That, wherever possible, a fixed restoration is preferable to a removable one.

That, wherever possible, a partial removable restoration is preferable to a full denture.

Endodontics takes its place with Periodontics, Orthodontics and Surgery, as one of the branches of clinical dentistry which operates to prepare the mouth for rehabilitation. Endodontics assumes tremendous importance in instances where teeth requiring treatment, are of such strategic value, that they mean the difference between a fixed bridge and a partial

denture, or between a partial denture and a full denture.

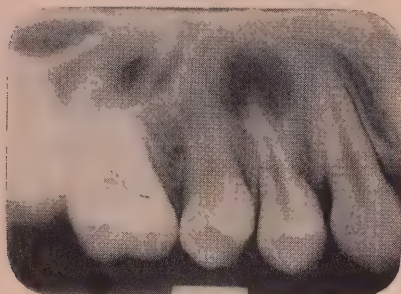
The dentist, however, should never allow the strategic value of a tooth to be the sole criterion for the selection of that tooth for treatment. Its aesthetic value may be high and it may be important as an abutment, but there are other important considerations which influence the prognosis. As in all other branches of surgery, the dentist depends on:

1. The patient's resistance.
2. The dentist's ability to carry out the treatment.
3. The dentist's experience based on previously treated cases.

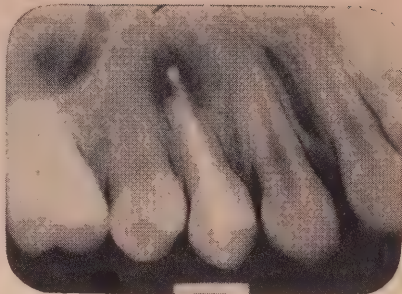
In all dental treatment, we depend on tissue resistance to tolerate operative procedures, and to recover from the inflammatory processes that follow them. When Endodontic treatment is carried out properly its effect is comparable to, and differs little from, any other dental or surgical operation. If the patient can have a tooth extracted and have the socket heal normally, that patient can have Endodontic treatment.

The factors for selection of a tooth for Endodontics then, are as follows: (Figs. 2-9)

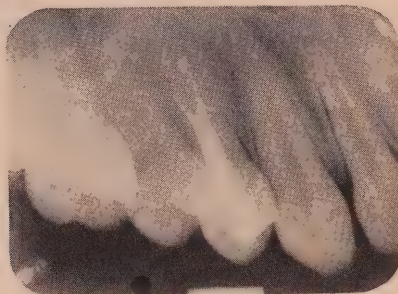
1. The patient has good resistance.



A — Pre-Treatment



B — Post-Treatment



C — Checkup: 2 years

FIG. 5

2. The tooth has sound periodontal structures.
3. The tooth has strategic value.
4. The anatomy of the canals are such that they are accessible to instrumentation and can be cleaned to the apices.
5. The patient understands and accepts the treatment.
6. The dentist has the experience and ability to handle the case.

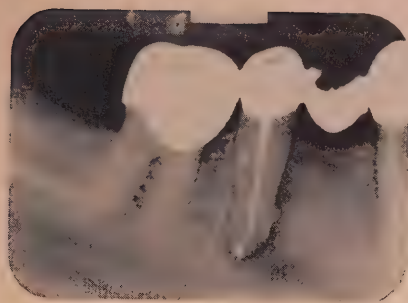
In showing you these cases of strategic teeth that have been treated Endodontically (Figs. 2-9), I have purposely selected only non-vital teeth with periapical areas. My objective in doing this is to introduce the question of the manner in which these cases were handled. The following general principles of Endodontic treatment were utilized in the treatment of all these teeth.

1. A careful diagnosis and selection of the case as one suitable for treat-

ment. I would particularly like to point out the value of electric pulp testing in determining the causative tooth in the cases where there is a large periapical area overlying the apices of a number of teeth.

2. All of these cases were treated conservatively with no surgical interference such as root resection or periapical curettage.

Now, I fully realize that there are definite indications for root resection. Teeth with broken instruments or perforations in the apical third of the root canal; incompletely formed apices where a good root canal filling is not possible, etc. However, the entire list of these types of cases where root resection or periapical curettage is definitely indicated comprise a very small percentage of the teeth that we treat. The majority of the teeth can be managed by means of Endodontic treatment confined to the root



A — Post-Treatment
Endodontic Treatment Instituted Through
Occlusal Surface of Bridge Abutment



B — Checkup: 2 years

FIG. 6



A — Pre-Treatment



B — Post Treatment



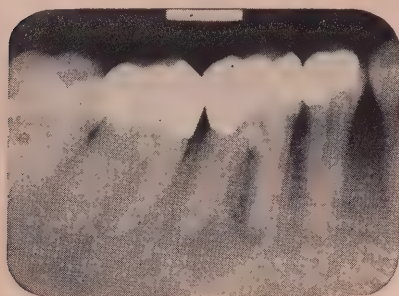
C — Checkup: 3 years

FIG. 7

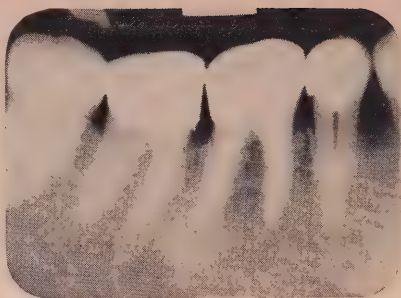
canal. Six months after treatment is completed, the case is called in for check-up and repair is noted. In a small percentage of these cases, if we see no repair or a noticeable increase in area size, then it is time enough to call on surgical interfer-

ence to eradicate the irritant which is preventing healing.

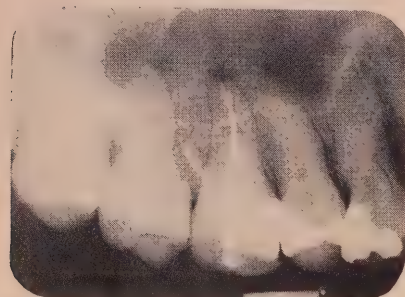
The question now arises, "What harm is there in performing a root resection in all these cases?" The answer is that there is no specific harm in any individual case.



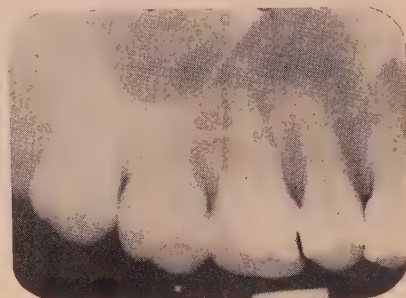
A — Pre-Treatment



B — Checkup: 19 months FIG. 8



A — Post-Treatment



B — Checkup: 1 year FIG. 9

However, the tendency to place our emphasis on root resection as a means of treatment creates a viewpoint which handicaps the range of Endodontic treatment. I showed you repair of periapical areas in bicuspid and molars where root resection could not very well be done. I showed you repair of the periapical area overlying the apices of a number of teeth with Endodontic treatment confined to the root canal of just one of these teeth. A root resection in this type of case would result in the devitalization of all the teeth involved in the area as a result of the surgery performed around their apices. The man who places his dependence on root resection does not train himself to get a result by means of conservative treatment.

3. All of these cases were treated with bacteriologic control. There are many reasons for using bacteriologic con-

trol in your endodontic procedures, particularly in non-vital teeth. These reasons are known to you. Bacteriologic control in Endodontics may be compared to playing baseball with an umpire—you make sure that you touch all the bases.

The reason which I would like to bring to your attention is that bacteriologic control is economical. As you know, a certain percentage of non-vital teeth yield a negative culture on opening into the canal. This knowledge is available to those who will take a pre-treatment culture of the root canal before beginning any instrumentation. Teeth which yield a negative pre-treatment culture can be carried to completion with fewer treatment visits.

4. All of these teeth were treated without the use of polyantibiotics in the root canals.

First Visit	Access to Canal	Pretreatment Culture*	Canal Debrided and Cleaned with Instruments and Chemicals	Polyantibiotic Dressing (Treatment #1)	Seal
*Cases with negative pretreatment cultures are not reported.					
Second Visit		Seal and Dressing Removed	Culture #1**	Treatment Continued	
**This culture tests effectiveness of treatment #1 placed in first visit.					
Third Visit		Seal and Dressing Removed	Canal Filled if Culture #1 is Negative	Treatment Continued if Culture is Positive	

TABLE 1: Pattern of Treatment and Culturing in Reports on Effectiveness of Polyantibiotic Paste Preparations.

I would like to say a few words about antibiotics. Soon after the discovery of antibiotics, they were brought into use in the field of Endodontics. The most recent form in which antibiotics have been tested and recommended for use is the polyantibiotic mixture as devised by Grossman.¹ This is a mixture of penicillin, bacitracin, streptomycin and sodium caprylate in a silicone vehicle, designed to be effective against all the types of micro-organisms claimed to be present in infected root canals. Bender and Seltzer² have reported on a similar mixture in which chloramphenicol is substituted for the bacitracin.

It must be understood that successful results have been achieved in Endodontics before the use of antibiotics as dressings. Further, root canals have been brought to the stage where cultures are negative before the use of antibiotics. The major claim made for the use of the polyantibiotic mixture is that there is a reduction in treatment time with the possibility of a reduction in the fee, thus making Endodontics available to more people.

Both the Grossman and the Bender and Seltzer studies follow a practically identical pattern of treatment and culturing to test the effectiveness of their dressings (Table 1). Moreover, both express their

results in terms of "the number of treatments required to obtain a negative culture." Grossman reports that the average number of treatments required to get a negative culture was 1.4. Bender and Seltzer report that an average of 1.1 treatments was necessary to get a negative culture.

I have found that a large percentage of the dentists I have questioned on this point have sadly misinterpreted these findings. It is their impression that the findings indicate the number of visits of the patient required to carry the case to completion. In other words, they have come to believe, for instance, that Grossman using a polyantibiotic mixture carries his cases to completion with an average of 1.4 visits of the patient.

An examination of Table 1 will show that under the most ideal conditions, with the most effective sterilizing agent imaginable, a minimum of three visits on the part of the patient is mandatory provided that one negative culture is required before filling the canal. The word "Treatment" in the expression of results means the placement of the antibiotic dressing in the canal. It does not mean a visit of the patient. The first treatment (antibiotic dressing) is placed at the first visit of the patient. The culture to test the effectiveness of this treatment is taken

Access to Canal	Pretreatment Culture	Canal Debrided and Cleaned with Instruments and Chemicals	Culture	Dressing and Seal
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TABLE 2: Pattern of Treatment and Culturing to Study Effect of Instrumentation Before Dressing is Placed.

at the second visit of the patient. This culture is read at least 48 hours later and cannot be translated into action until the patient arrives for the third visit.

We can restate the results on the effectiveness of polyan antibiotic mixtures as follows: Grossman completed his cases in an average of 3.4 visits of the patient. Bender and Seltzer completed their cases in an average of 3.1 visits of the patient. In both instances one negative culture was required before filling the root canal.

Similar results can be and have been achieved with simpler preparations. Ostrander^{3, 4, 5} reports that no change in results or saving of time can be attributed to polyan antibiotic paste preparations as compared to commonly used drugs such as paramonochlorphenol. In a series of 200 cases dressed with aureomycin hydrochloride and a suitable carrier (Diethylene Glycol), the author achieved a negative culture and completed the cases in an average of 3.1 visits of the patient.

Your essayist has always felt that the most potent method of sterilizing an infected root canal is the mechanical debridement of all tissue and the mechanical cleansing of the walls of the canal with root canal instruments—accomplished with the help of a suitable chemical. This concept is seriously challenged by the fact that in both the Grossman and the Bender and Seltzer studies no importance is placed on the effect of the mechanical debridement and canal cleansing that is performed between the taking of the pre-treatment culture and the placement of the antibiotic dressing at the first visit of the patient. Does the negative culture prove the effectiveness of the antibiotic dressing or does it prove the effectiveness of the instrumentation?

In an attempt to study this point, I re-

ported on a series of teeth treated in the following manner:⁶

All of these teeth were non-vital, gave no response to the electric pulp tester and required no anaesthetic for treatment. In each instance the tooth was isolated with the rubber dam and treated with an aseptic regimen. Access was gained to the root canal and a pre-treatment culture taken with a paper point impregnated with culture medium. The canal was debrided of tissue with suitable broaches. Access to the apex was gained with reamers and files. A measurement radiograph was taken to control further instrumentation. The canal was flooded with chlorinated soda (double strength). With this material in the canal, the walls were thoroughly cleaned and smoothed with files and reamers. The canal was then repeatedly flushed with hot, sterile, distilled water and then dried thoroughly with sterile paper points.

Before placing a dressing and sealing the tooth, a culture was again taken. A sterile paper point was dipped into culture medium and placed as close as possible to the periapical foramen. This second culture served to show what effect the instrumentation had on the original bacterial status of the canal. (Table 2)

In this study 78 per cent. of the positive canals became negative following debridement and cleansing of the canals, and before any dressing had been placed in the canals.

The introduction of antibiotic dressings into Endodontics has, to an extent, been harmful. Dentists have been inclined to neglect the fundamental principles of Endodontics in their tendency to rely on the antibiotics. Moreover, successful results are always attributed to the dressing used.

Endodontics is essentially an operative procedure. Proper access to the root canal and to the apices; removal of all organic tissue; a good root canal filling—these are the basic factors that make for success. The practising dentist who learns these things will improve the nature of the treatment which he renders his patients. He will understand the aetiology of pulpal diseases, and will be able to interpret their symptoms and roentgenographic manifestations. He will understand inflammatory processes and their effect on tissue cells and tissue organization. Teeth with involved pulps will be diagnosed, and suitable ones accepted for treatment. These teeth will be treated under an aseptic regimen, with a well-organized armamentarium, and with due

regard for the therapeutic and biomechanical phases of Endodontic procedures. The net result will be better service to the dental patient and improved professional standing for the dentist.

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Abstract

Role of trauma from occlusion in initiation of periodontal pocket formation in experimental animals.

by IRVING GLICKMAN and LEON A. WEISS, Boston, Mass.

Journal of Periodontology, January 1955.

The purpose of this study was to investigate the specific question as to whether trauma from occlusion initiates periodontal pocket formation.

Under the conditions of this experiment, trauma from occlusion did not initiate the formation of periodontal pockets. Forces of sufficient severity to produce notable changes in the periodontal membrane and extensive resorption of alveolar bone, produced no deepening of the gingival sulcus or change in the position of the epithelial attachment on the tooth surface. Nor was there any evidence of proliferative change in the epithelial attachment, or detachment of epithelium from the tooth surface.

It is noteworthy that in both the control and experimental animals the gingiva presented extensive chronic inflammatory involvement. The fact that

periodontal pockets did occur when trauma from occlusion was introduced under such circumstances emphasizes the negative role of trauma in the initiation of periodontal pockets.

The observation that trauma from occlusion does not initiate periodontal pocket formation should not be enlarged into the broader generalization that trauma is in no way a factor in the overall process of pocket formation. It should be borne in mind that our experiment was concerned only with the initiation of periodontal pockets. The equally important consideration of the manner in which trauma from occlusion may contribute to the deepening of a periodontal pocket once it has been started was not investigated. From the presented findings it would therefore be presumptive to hypothesize regarding the role of trauma in any phase of the overall process of pocket formation other than that of the initial stage. Nevertheless, the findings leave us no alternative but to question the validity of the popular assumption that trauma from occlusion, in itself, is an etiologic factor in the initiation of periodontal pocket formation.

ABSTRACTS

Hyaluronidase for prevention of edema after removal of impacted mandibular third molars.

by H. E. YOUNG, D.D.S., and B. C. KINGSBURY, Jr., D.D.S.

The Journal of the American Dental Association, April, 1955.

The value of hyaluronidase for prevention of traumatic swelling was studied in 51 patients operated on for bilateral impaction of mandibular third molars.

The teeth were removed under general anaesthesia, and hyaluronidase, in doses of 1.5 c.c. dissolved in sterile normal saline solution, was immediately injected near the masseter muscle. One side of the jaw was used for the prophylactic treatment and the other side for the control operation in each patient.

In 22 patients, trauma was about the

same on both sides; therefore, injections were alternated from left to right sides. Of the 29 in whom operation on one side presented greater difficulties or required a longer time than on the other, 22 received the injection on the side subjected to greater trauma, and seven patients on the side less severely traumatized.

On the first postoperative day no swelling was present on the treated side of the jaw in 51 per cent of the patients, slight swelling was present in 43 per cent and moderate swelling in 6 per cent. After the control operations, all patients had swelling, Edema was severe in 25 per cent, moderate in 51 per cent and slight in 24 per cent. No localized or generalized side effects developed. The hyaluronidase solution was found to be completely nontoxic in more than 200 injections.

Motivation in Health Education

by HOMER N. CALVER

Third Public Health Workshop on Dental Care in Industry—January 21, 1955.

The reasons people have for acquiring any kind of knowledge do not vary too widely despite the kind of knowledge desired or required, or with the way in which the knowledge is acquired. These reasons are frequently called motivating factors. Motivation is simply the force, or sum of all the forces, which leads to action. The skill to motivate individuals or groups to seek and adopt health information depends largely upon the edu-

cator's understanding of how his audience perceives the problems, and upon the educator's understanding of the network of other motives his subject is involved in. There are an infinite variety of perceptions and complexes of motives in the health field, and a few of these will be described.

Most motives are learned, picked up through the experiences of a lifetime. A complex of motives begins when a human being feels a need and seeks out a means to satisfy it. Before long, the means of satisfaction itself is felt as a new need, one which itself demands satisfaction. Shortly, a whole network of inter-related motivations is established. It is upon the

understanding of these processes that successful motivation is based.

Motivation arises when a need is expressed; to motivate one, therefore, depends in large part upon introducing a need. Needs, both real and imaginary, arise from one's culture, society and experiences. Where a dentist may feel a need for a preventive dental procedure like water fluoridation, as a means of reducing the treatment load, the layman may see false teeth as a much better way of avoiding the oft-times painful experience of dental treatment—both feel a similar need but perceive the solution differently, depending upon many background factors.

It has been well demonstrated that to impart a new health attitude or change a health habit, the individual must teach himself through directed self-appraisal of the situation, through discovering selected facts himself, and most importantly, through his very involvement in the educational process . . . health education is an active and not a passive process. Therefore, proper motivation bears an important part in successful health education, for only an individual who feels a need for change and who is motivated to seek a change will pursue the matter far enough to decide to change. The subject to be educated must be given a motive that in his perception will satisfy a need or solve a problem.

Differential Diagnosis of Dental Pain.

by CHARLES G. MAURICE, D.D.S., M.S.

The Journal of the American Dental Association, March/55.

An understanding of the phenomena of pain is of vital importance to the dentist. The experience which the patient calls "pain" is complex and takes into account the sensation of pain, other associated sensations, and various feeling states.

Pain sensation is subserved by naked nerve endings which are capable of responding to any stimulus sufficiently intense to cause or threaten injury to tissues.

Two types of pain can be identified, each of which has its own distinct qualities. One of these is superficial pain originating in the cutaneous regions, while the other is deep pain originating in the deep somatic structures and viscera.

The ability to perceive pain from an experimentally applied stimulus is remarkably stable in man, provided the subject maintains an unprejudiced and detached attitude. Such factors as age, sex,

emotional states and moderate fatigue have little influence on the pain threshold.

In a particular real life condition, the total pain experience of an individual is noticeably influenced by his emotional state.

The dentist should be able to diagnose and treat all pain arising from disturbances of the dental pulp, the tissues which surround and support the teeth, and probably, also, the temporomandibular joint.

Pulpal pain is caused by stimulation of nerve fibers within the pulp. Sufficiently intense stimuli injure the pulp and precipitate an inflammatory response which may be acute or chronic in nature. The clinical symptoms as well as the microscopic appearance vary with the type of inflammation.

Periodontal pain arises from injury of the periodontal tissues and may be classified according to cause into that due to infection and that due to acute trauma.

Submerged or impacted teeth, exposed dentine, alveolar osteitis or dry socket, and disturbances of the temporomandibular joint are other sources of pain.

Cases Indicating Early Treatment.

by H. K. TERRY, B.S., D.M.D.

American Journal of Orthodontics, April, 1955.

Any condition which has correctable factors existing that, if allowed to remain, will continue to affect the case adversely, be it hard or soft tissue should be treated. These would be the Class III and Class II, Division I malocclusions, anterior and posterior cross-bites, and habit-correctable cases. Another way to decide upon whether or not to treat very early is to determine whether the answer to each of the following questions is "yes":

1. Is basic skeletal structural pattern incorrect?
2. Are existing conditions and habits likely to allow this incorrect pattern to remain as is or become progressively worse?
3. Can treatment make a favorable change in either the habit, the condition, or the structural imbalance?

If the answer to all these is "yes" and the interest of the patient is paramount, treatment may be instituted as early as is practically favorable or even as early as, in the case of one of our youngest patients, 17 months of age.

When the answer to one of these questions is "no", there may be definite reasons to postpone treatment until later. By "later", until the loss of all the de-

ciduous teeth still is not intended, but until the age of 6 to 10 years. In conversation with the parent of a child, when it is desirable to wait before starting treatment, extreme care should be taken to inform the parent that the advice is only for her child and his particular condition.

When the stage of dental development has reached the exfoliation of the deciduous molars, the Class II, Division 2 cases without soft tissue problems and the definite extraction cases of Class I should be started. Just before the loss of the second deciduous molars, the Class I cases with slightly crowded teeth should receive attention.

It narrows down to the conclusion that the only cases in which appliances should not be placed in the deciduous or mixed dentition are the following:

1. Those who do not arrive at the office until after all the deciduous teeth are lost.
2. Those that seek advice but may not require orthodontic care.
3. The Class I cases with a slightly decreased vertical dimension. They may open somewhat when the molars shift upon the loss of the second deciduous molar.
4. The Class I cases with spacing, but normal lip action.
5. Some mutilated cases of all classes.
6. Cases that cannot be correctly diagnosed, sensibly treatment planned and prognosed to a successful conclusion.

Clinical Assessment of Nylon as a Partial Denture Base Material.

by D. M. WATT, F.D.S.R.C.S., H.D.D. Edin.

British Dental Journal, April 5, 1955.

There is a remarkable scarcity of literature on the applicability of nylon to dentistry. A relatively small group of thirty-six nylon partial dentures which have been in clinical use for periods up to six months have been studied. The

material has exhibited a number of properties which are undesirable in a denture base. The nylon used for making the dentures was an ordinary commercial grade which had a high water absorption. Many of the undesirable properties which appeared during clinical trial may have been due to this.

Nylon A100/M was used in its natural state for making a control group of six partial dentures but the remaining dentures were coloured.

The chief advantages of nylon denture bases are strength and lightness. The ultimate tensile strength of nylon A100/M is 10,000 to 11,500 pounds per square inch as compared with 7,000 to 8,000 pounds per square inch for acrylic. This makes skeleton denture designs, which would be impracticable if made in acrylic, a feasible proposition when made with nylon. The advantages and disadvantages of nylon A100/M as a denture base are as follows:

Advantages: (1) Nylon is strong enough to permit the fabrication of skeleton dentures. (2) Its flexibility gives a stress-breaking action in certain types of partial dentures. (3) Its manipulation is relatively simple, once the necessary equipment has been obtained. (4) It can be

used for making clasps. (5) It is lighter than acrylic. (Nylon sp. gr. 1.14. Acrylic sp. gr. 1.19.)

Disadvantages: (1) It stains badly in the mouth. (2) Its surface becomes rough and soggy after a few weeks' wear. (3) It has a high thermal shrinkage when cooling from moulding temperature to room temperature. (4) Its flexibility is too great for tooth-borne short-bounded saddle partial dentures. (5) Its surface encourages bacterial growth. (6) The junction between teeth or metal inserts and the nylon denture base is a poor one.

The materials and method used must be kept in mind since it seems likely that new grades of nylon and other methods of fabrication may produce better dentures than those under review.

Gingival Pathosis in Mouth Breathers.

by THEODORE LITE, B.S., D.D.S., DOMINIC J. DIMAIO, B.S., M.D., F.A.C.P., F.A.S.C.P., and LOUIS R. BURMAN, D.D.S., F.A.D.M., F.A.C.D.

Oral Surgery, Oral Medicine and Oral Pathology, April, 1955.

Mouth breathing contributes to gingival irritation. This is induced by decreased gingival stimulation and dehydration of the tissue. Common causes of oral respiration are nasal obstructions, habits, malocclusions, systemic disturbances, and psychogenic factors. The inflammatory reaction produced by mouth breathing is of an exudative nature, as shown in the before-treatment and regressive stages of the study. The connective tissue responded by extreme dilation of the blood vessels which allow the passage of large amounts of fluid into the tissue. Mucous membrane is normally moist. The drying effects on the epithelium might possibly produce degeneration and necrosis, as well as slough, as an end result. This last result is pre-

vented perhaps by the reaction of the underlying connective tissue which supplies the necessary moisture.

In both the before-treatment and regressive phases, large amounts of moisture are contained in the epithelial layer. The extreme amount of hydropic degeneration show this to be true. If this reaction is allowed to continue, more harmful effects may be produced. There may be degeneration of the underlying connective tissue accompanied by breaking up and destruction of the fibrocollagen bundles. The progressive increase in the degeneration of the gingival tissue may cause more severe periodontal disease with subsequent loss of teeth.

In the treatment of this type of dysfunction, removal of some of the aetiological factors may necessitate consultation and treatment by medical practitioners. Pending other corrections, local dental treatment consists of: (1) gingival massage and toothbrushing; (2) home care, including the application of a protective coating of petrolatum jelly; (3) sealing of the teeth; (4) subgingival curettage; and (5) occlusal equilibration.

Oral Hygiene Habits of Young Adults.

by LILLIAN O. DAHL and JOSEPH C. MUHLER.

The Journal of Periodontology, January 1955.

The oral hygiene and toothbrushing habits of a group of 340 freshmen students at Indiana University were studied for a period of one year in order to ascertain pertinent facts relating to the oral hygiene. It was apparent from the data in this study that the toothbrushing habits in young adults are quite similar to those of a children's group. The single factor which is different in the adult study is in relation to an increase by

approximately 30 percent in the frequency per day of toothbrushing. There appears to be little relationship between the time required to brush the teeth and the overall oral hygiene, since females brush for shorter periods of time but more are found to have a good oral hygiene than males. Only 11.5 percent of this group brushed their teeth three times a day after meals.

The rate of calculus formation was estimated during a six-month period following a thorough dental prophylaxis. It was observed to be a very slow process in this young adult group. More study is indicated concerning this latter phenomenon.

Cardiac Resuscitation.

by SEYMOUR ALPERT, M.D.

Journal of Oral Surgery, April, 1955.

The primary factor in cardiac resuscitation is immediate recognition of circulatory and respiratory depression. Resuscitative efforts should be started at once, and a definite routine of fluids and drug administration and mechanical treatment must be followed judiciously. Of paramount importance is the establishment and maintenance of a patent

airway. This allows adequate pulmonary ventilation to assure effective oxygenation and elimination of excess carbon dioxide. Circulation should be supported carefully, and resuscitative efforts should be synchronized with the patient's own breathing. Cardiac massage, when indicated, should be carried out efficiently and at once.

The techniques of inhalation therapy and resuscitation are mastered easily. Thorough knowledge of these methods and the prompt application in time of need may save a life.

Intravenous anaesthesia is the solution to one of the important problems of dental anaesthesia. There is evidence to prove that this method deserves extended use. Anaesthesia should be managed with the intravenous drug in the primary role; secondary drugs should be selected carefully to meet the physiological needs of the patient. The most important forward step in dental anaesthesia of the last decade is the use of the intravenous method by practitioners well grounded in the principles of good anaesthesia.

Harold W. Krogh, D.D.S.

Journal of Oral Surgery, April, 1955.

Among both men and women at every age, the married have lower death rates than the single, widowed, or divorced. When allowance is made for the variation in age distribution, the mortality of bachelors is nearly two-thirds greater than that of husbands, and the mortality of widowed and divorced men is about double that of husbands. The differences are not as large for women. The mortality of spinsters is a fourth again as high as that of wives, while the mortality of widows and divorcees is half again as high. The available data do not afford an interpretation of the nature of selection of persons into the marital groups, and the effect of marriage itself on mortality rates.

Dewey Shurtleff, M.P.H.

Public Health Reports, March 1955.

PUBLIC RELATIONS

The ethical position of a dental nurse

If a Dental nurse is a graduate of a recognized school of training she probably has had satisfactory instruction in ethics. If she has had no formal training she could scarcely be expected to appreciate all the niceties expected of a dental nurse beyond those that go with a good home background — which means she should be a gracious, efficient young lady.

It is the responsibility of the dentist employing a nurse to instruct her as to her conduct in respect to her responsibility toward dentistry both in and out of the office.

Everything that goes on in the office is confidential and should not be spoken of outside the office even to her family. This rule should apply even though she may think it permissible if she omitted names. Stories have a way of growing.

These confidences apply to operative procedures and general conversation with patients. The dentist's manner of dealing

with patients, his financial arrangements or his fees, are outside the bounds of discussion.

Frequently at social functions, because she is known to be a dental nurse, she is asked to give advice about what should be done in certain circumstances, sometimes even being asked to make a diagnosis. She is often requested to state how much it costs to have certain types of treatment performed or how much a denture would cost, etc., etc. To all such enquiries a dental nurse should reply in most general terms, stating that she is not qualified to offer an opinion. Frequently it requires a good deal of tact to avoid making the enquirer feel that he has not been rebuffed.

Gossip from the office should be avoided like the plague.

In essence — If a dental nurse cannot cope with these situations tactfully and gracefully she probably should be in some other type of occupation.

I believe that our greatest responsibility, collectively and individually, is to give a service that means better health, happiness and greater opportunity to the children of our country. This will bring us as individuals, the greatest possible reward for our professional activities and will write the history of our College in everlasting records.

Harry S. Thomson, D.D.S., F.A.C.D.—from his Presidential Address to the American College of Dentists.

Journal American College of Dentists, March, 1955

EDITORIAL

The Board of Governors Meeting—1955

The decisions which ensued from the deliberations of those in attendance at the Board of Governors' Meeting have passed into the archives of the Canadian Dental Association. These decisions will, to either a greater or lesser degree, affect every practising dentist in Canada. Dentistry has long since ceased to be a profession where one could establish himself as a practitioner, care for those who sought his services and ignore responsibilities in the much broader socio-economic plane. Dentistry is a vital health service and as such must discharge its obligations in consideration of all the influences which affect the profession. The Canadian Dental Association with its more than twenty active committees attempts to guide dental affairs in accordance with the concept which recognizes that the prime responsibility of the profession is service to the people of our land.

From May 11th to 14th, 1955, the members of the Board of Governors, the chairmen of committees, representatives from the Departments of National Defence, Veterans' Affairs, and National Health and Welfare, and other interested dentists, met in session at the Royal York Hotel in Toronto. There the activities of the year just passed were reviewed both in Reference Committee and in General Session, and from these perusals courses of action were planned for the future.

It would be quite impossible to enumerate all the considerations to which thought was given and decisions were rendered. Sometime in the not too distant future, the complete Transactions of the meeting will be sent to all members and

it would be in the best interests of each to take cognizance of the committee reports, the reports on the reports, and the resulting decisions and actions. Such attention would undoubtedly reap rich rewards in knowledge of Canadian dental affairs.

In Research it was evident that the Studentship Programme was demonstrating very tangible results and with such training as offered through this project, fundamental biological research, the prime area of emphasis, is receiving increasing attention.

The Council on Dental Education has prepared a Five-Year Projected Plan which should certainly do much to guide the development of dental education in Canada.

Many decisions arose from the report of the Health Insurance Studies Committee. It was decided to conduct another survey of dental practice by 1959, and the results of the 1954 survey as serialized in the Journal were given thoughtful attention.

Corporate members were urged to make representations to the provincial authorities to implement a plan for provision of adequate dental treatment to Blind pensioners and their dependents, Widows' Allowance pensioners and their dependents, Old Age pensioners and their dependents, and Widows' pensioners.

It was again reiterated that the Canadian Dental Association should encourage the authorities concerned to develop and expand dental research, educate all people in accepted methods for the prevention of oral and dental diseases,

and develop and expand facilities for the training of dentists and ancillary personnel.

The Board gave approval to one plan of dental care, now being operated in Sudbury, Ontario, called the Pilot Study Plan. Here we find the common sense approach which places emphasis upon the direction of remedial care to the incidence of disease rather than the prevalence.

The Dental Budget Plan of Canada was not approved, as it was apparent that certain aspects of the plan contravened some of the adopted principles for Post-Payment Plans.

In respect to Auxiliary Services three important resolutions materialized. The first reaffirmed the stand of the profession in its recommendation for the employment of dental hygienists but did not approve the principles involved in the New Zealand Dental Nurse Scheme. The second resolution suggested that the Provincial Dental Legal Bodies co-operate with and offer assistance to the ethical dental laboratories in the conduct of their organization. Unionization was the subject of the third resolution — "the Canadian Dental Association believes that it is the right of every group to organize in accordance with the laws of the land. The unionization of dental laboratory technicians is not a problem with which the dental profession should concern itself unless in its opinion there is interference with the right of the dental profession to fulfill its own obligations to the dental health of the public."

Matters relating to Income Tax considerations were also discussed, resulting in the following resolutions: — The Executive is directed to approach the Minister of Finance proposing for approval a Pension Plan for the members of the Canadian Dental Association on the terms and conditions as now obtain to Pension Plans established by employers with payments in full to be made by the members. The Department of National Revenue is to be asked to continue allowance of deductions of legitimate expenses for attending specified conventions.

The Board viewed Incorporation of dental practice with disfavour. Incorporation is established to absolve the individual from responsibility and for the purpose of paying dividends. Neither of these reasons is professional in character.

Public Relations, Dental Public Health, and indeed all other Committee activities received similar conscientious attention, but limitations of space do not permit a coverage here. The ramifications of the decisions in these areas, however, are just as far-reaching as those which have been enunciated.

The elected and appointed individuals who are charged with the responsibility of guiding the destinies of our Association have served the membership faithfully and well. The achievements of the Association, however, are dependent upon the interest and the participating co-operation of the profession. The Board of Governors have suggested plans for the conduct of dental affairs during the ensuing year. Active participation is essential for their implementation.

Science, by itself, provides no panacea for individual, social and economic ills. It can be effective in the national welfare only as a member of a team, whether the conditions be peace or war. But without scientific progress, no amount of achievement in other directions can insure our health, prosperity and security as a nation in the modern world.

Vannevar Bush.

Journal of Oral Surgery, April, 1955

Book Reviews

A Comprehensive Review of Dentistry, 2nd Edition. By Vincent R. Trapozzano, D.D.S., F.A.D.P., with the collaboration of twenty-four contributors. Published by W. B. Saunders Co., West Washington Square, Philadelphia 5, Pa. Pages 665.

This text is designed primarily for those who are preparing for dental state board examinations, but it also serves as an excellent review for the graduate dentist and the undergraduate as well.

The material, while not encyclopedic in proportions is presented, in question and answer form, in a concise manner, covering twenty-one basic aspects of the dental profession. It would be almost impossible to present a greater fund of information upon almost any conceivable phase of dentistry either direct or related, than is contained in this book.

A most comprehensive index facilitates reference and the answer, therefore, to almost any

question of dental significance, is readily available. This text is outstanding. W.J.D.

Accepted Dental Remedies 1955. Published by the American Dental Association. Pages: 207, including a general index, a distributors' index, index to current reports from the Council on Dental Therapeutics and an index to more recent reports on products not included in accepted dental remedies. Price: \$2.00.

The 20th issue of the annual publication of the Council on Therapeutics of the American Dental Association once more indicates the essential nature of this publication for the dental profession at large. All aspects of dental therapeutics are covered and the latest information is available pertaining to all the therapeutic adjuncts necessary to the practice of dentistry. This excellent publication continues to render a vital service to the dental profession and should be in the possession of all practitioners. W.J.D.

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions

ASGIS, A. J., and LANZA, A. J.: Occupational oral-health in general dentistry and public health. Vol. II. 1954. 60p.

OVADIA, A. K.: My friend, the dentist. 1952. 57p. illus.

PELTON, W. J., and WISAN, J. M.: Dentistry in public health. New 2nd ed. 1955. 282p. illus.

SCHAEFFER, J. P.: Morris' human anatomy. 11th ed. 1953. 1718p. illus.

SHAPIRO, H. H.: Maxillofacial anatomy with practical applications. 1954. 302 p. illus.

SWENSON, M. G., and TERKLA, L. G.: Partial dentures. 1955. 421p. illus.

TRAPOZZANO, V. R.: Review of dentistry. 2nd ed. 1955. 655p.

TYLMAN, KEYS, KNUTSON, NOYES, ROBINSON, and WALDRON: Year book of dentistry. 1954-1955. 464p. illus.

The VIPEHOLM Dental Caries Study by the Dental Research Section of the Royal Medical Board, Vipeholm Hospital. Reprint from Acta Odontologica Scandinavica, Lund, Sweden. 1954. 194p.

WHITE, T. C., GARDINER, J. H., and LEIGHTON, B. C.: Orthodontics for dental students. 1954. 367p. illus.

The Association

Medical and Surgical Benefits may be added in Blue Cross Coverage

Announcement has been made that medical and surgical benefits may be added under the C.D.A. Blue Cross Plan. These benefits will be available to those dentists taking out Blue Cross Benefits in Ontario, Quebec and the four Maritime Provinces. No arrangements have been completed in the other provinces.

The benefits and rates are as follow:

ONTARIO:

Up to \$300.00 Surgeon's fees
Up to 51 days in hospital Medical treatment at \$3.00 daily
Rates: Family—\$35.40 annually
Single— 11.40 annually

QUEBEC:

Up to \$200.00 Surgeon's fees
Up to 31 days in hospital Medical treatment at \$3.00 daily
Rates: Family—\$42.00 annually
Single— 11.40 annually

4 MARITIMES:

Up to \$300.00 Surgeon's fees
Up to 31 days in hospital Medical treatment at \$3.00 daily
Rates: Family—\$36.00 annually
Single— 13.40 annually

Dentists in the above indicated provinces have received a circular respecting this matter. All inquiries on this matter are to be addressed to: C.D.A. Pension-Assurance Plan, Box 70, Brockville, Ontario.

Fluoridation Notes

Fredericton — City Council approved fluoridation March 8th.

Prince George, B.C. — orders fluoridation equipment and may become the first city in B.C. to actually fluoridate water supply.

Windsor — City Council adopts fluoridation and votes money for equipment pending statement by Premier Frost re University of Toronto report.

Renfrew, Ontario — Town Council approved fluoridation on March 22nd last.

Michipicoten, Ontario — Council accepted without a dissenting vote the proposal of the Board of Health to fluoridate the town's water supply.

Chicago — City Council approved fluoridation to begin October, 1955.

Toronto Township — A suburban area of Toronto began fluoridation of the water supply last month.

Dental Equipment now Free of Duty

The Federal Budget, announced April 5th, 1955, contained an item, making dental chairs, dental units, electric dental engines and parts of the foregoing free of duty. This action should immediately lead to a reduction in costs for new equipment, thus easing the burden of new graduates and assisting older practitioners in making replacements. The Canadian Dental Association has advocated this action for several years.

F.D.I. Meetings Scheduled for Copenhagen and Athens

The 43rd annual meeting of the Federation Dentaire Internationale will be held this summer in Copenhagen, Denmark, Aug. 14 through 20. The Federation will also hold a special meeting Sept. 25-30 in Athens in conjunction with the Second Panhellenic Congress. At Copenhagen, the business and scientific program will be presented in the Danish Parliament Building, the Royal Dental College and the Copenhagen University Institute of Anatomy. One day will be devoted to a tour of North Sealand and visits to historical places such as Elsinore Castle. The Athens meeting will be preceded and followed by nine-day cruises between Venice and Greece. Main topics on the scientific program at Athens will be social dentistry, paedodontics, periodontics and endodontics.

Committees and Councils

Nomenclature

The Nomenclature Committee attempted to define its functions as follows:—

1. Maintain a watching brief over new developments in dental nomenclature and give advice upon request to interested parties when problems of terminology arise.

2. Clarify certain principles of nomenclature.

3. Be responsible for the systematic naming of objects or conditions, but not to frame their definitions. The latter is the responsibility of the profession.

The Committee was granted approval of the Board in respect to the following considerations—such matters now being official policy of the C.D.A.—

1. The New Oxford dictionary is re-

tained as the official source of reference.

2. The “ics” ending to be employed wherever possible.

3. The official names of certain aspects of the profession should now be in standardized use: Oral Surgery, Periodontics, Orthodontics, Radiodontics, Prosthodontics, Paedodontics, Endodontics, Preventive Dentistry, and Dental Public Health.

Any activity by a Committee on Nomenclature is abortive unless the suggestions of the Committee which receive Board approval are put into use. The obvious areas in which to consummate such suggestions are in the Journals and at the teaching institutions. It is the sincere hope of the Committee that those responsible in each of these fields will co-operate in this regard.

Wesley J. Dunn, Chairman.

The Corps

A three day course of lectures for qualifying examinations, Capt. to Major and Lt. to Capt., was held by 54 Dental Unit, 21 April 55 to 23 April 55. The course was directed by Lt. Col. G. K. Clarke, CO of the Unit. Subjects covered were: Organization, Training, Special to Corps, Military Law, Unit Administration.

Lectures were delivered by Lt.-Col. G. K. Clarke, Lt.-Col. I. A. Millar, Lt.-Col. H. R. McLaren, Major C. E. Woods, Major R. H. G. Cunningham, Major H. J. Chartrand, Major H. Hart, Major G. R. Covey, Capt. V. J. Layton, Capt. C. G. Hunt, Capt. J. W. Fletcher, Capt. D. E. Long, Lt. J. C. Hanson, O/C H. R. Woods, WO2 Ferguson, Sgt. V. Blackmore.

Officers attending the course: Capt. W. C. Gallagher, Capt. C. G. Hunt, Capt. D. E. Long, Capt. A. C. Murchison, Capt. E. H. Jones, A/Capt. H. F. Pallet, A/Capt. J. Thomas, O/C H. R. Woods, all of Ottawa; Capt. F. M. Bliss, Brockville; A/Capt. C. O.

McDougall, Brockville; Capt. W. D. M. Wright, Cobourg; A/Capt. R. Green, Peterborough; A/Capt. D. E. J. Mitchell, Peterborough.

A Mess Dinner for Officers 54 Dental Unit CA (M) was held at Wallis House, Ottawa, Friday 22, April '55. President for the dinner was Major H. J. Chartrand and Vice-President was O/C H. R. Woods. Following were the official guests:

Brig. M. S. Dunn, Col. C. B. H. Climo, Col. F. R. Drewry, Lt.-Col. E. D. Baldock, Lt.-Col. I. A. L. Millar, Lt.-Col. H. K. Brown, Lt.-Col. P. A. Costin, Lt.-Col. I. W. Hamilton, Major E. Gluck, Major A. F. Roger, Major R. G. H. Cunningham, Major H. W. Hart, Major W. D. Grant, Lt. J. L. Lalonde.

Brig. Dunn, in his response to the toast to the Tri Services Chiefs of Staff, complimented Col. Clarke on the efficiency of the Unit and said that it was the first time that he had seen so many Dental Officers of a Militia Unit gathered at a Mess Dinner.

Economic Security

Why Not Whole Life?

(Part I)

By E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.,
Consulting Economist and Administrator of the CDA
plan.

The general problem of relating the type of Assurance Policy to the "economic need" which it is intended to meet was discussed in an earlier article ("Journal of the C.D.A." March, 1954, Vol. 20 at page 157), but so many questions have been raised on the specific problem of "Whole Life" that this particular type of

contract appears to merit special examination.

The first point in connection with "Whole Life" is that the actuary assumes in designing the contract that the full face value will be paid on decease of "the life assured", whenever that may be—i.e., a "cash surrender" is never assumed and the premium is based entirely on normal life expectancy at the age the contract is taken. "Mortality" is, therefore, the predominant factor in the premium.

Graphically:

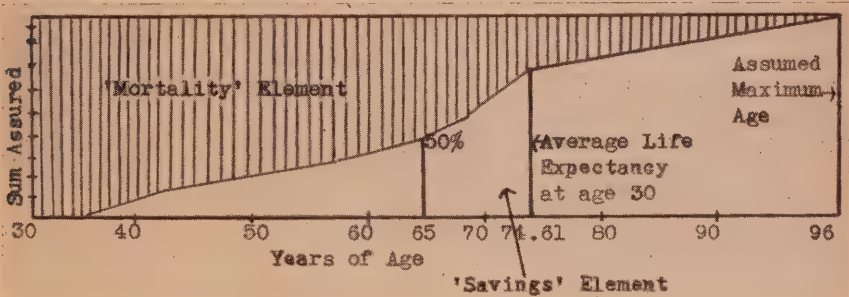


FIGURE 1—Actuarial Basis of "Whole Life" contracts.

Premium at interest X years of normal life expectancy = principal sum + cost of operation.

The second consideration is whether the "economic needs" of a professional man (August, 1954 "Journal", Vol. 20, page 447) coincide with the above actuarial assumptions. The governing factor is the absence of any tangible saleable asset in a professional practice. A contrasting of the position of the professional man with that of the business man may be helpful: The business man possesses a tangible, going concern which will assist in maintaining his family in the event of his decease early in life; and the business itself must be protected against forced liquidation for Succession Duties, even long after the proprietor has retired from active participation. The business man's requirements, therefore, tend toward a level

amount of insurance throughout his life. This need often is well served by "Whole Life."

The professional man, in contrast, has a single, intangible asset: his ability to continue professional practice, and he must in the early years—before he has been able to accumulate any savings—protect his family against the loss of this. As we saw in the "Economic Needs" article, the average family of a professional man will require at the outset of his career protection aggregating \$100,000.00 to \$125,000.00. This being made up of a moderate monthly income so long as the children are dependent, a reduced life income for the widow after the children are grown, liquidation of any mort-

gage on the home, and discharge of the business indebtedness which is likely to exist at the early stages of career.

Conversely, when he reaches retirement, the professional man's sole vital need is income for himself and his wife so long as both or either of them live. No question arises of meeting Succession Duties on the value of his professional practice, since that vanishes the moment that he retires or dies. The amount of insurance payable on decease which he requires in the later years of practice steadily diminishes, and after his retirement normally is met by the comparatively small sum of \$2,500.00.

Graphically, the needs of the professional man and the business man may be represented thus:

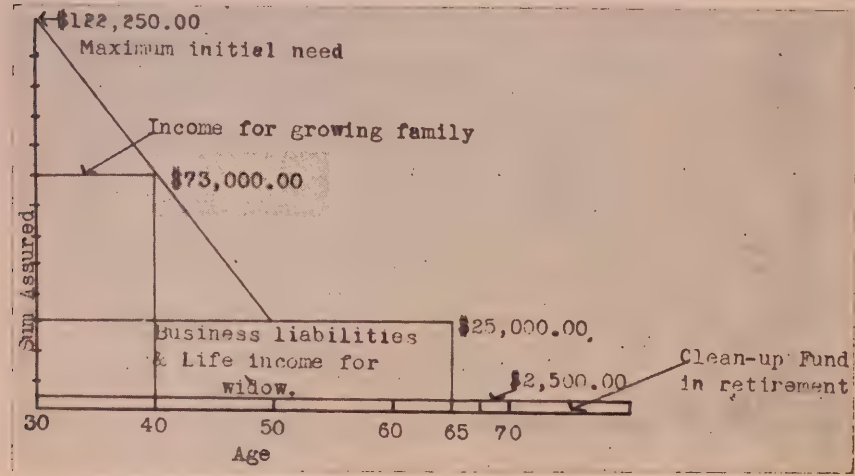


FIGURE 2. Professional Man's 'Economic Needs' on decease.

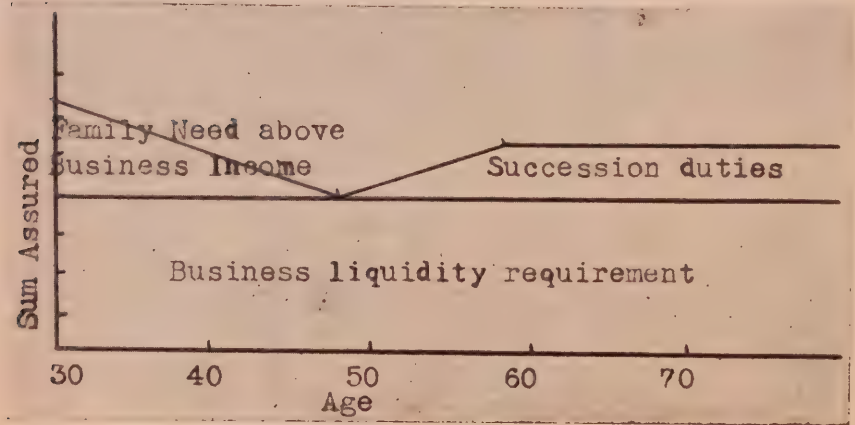


FIGURE 3. Business Man's 'Economic Needs' on decease.

It will at once be observed that Fig. 3, the business man's needs, closely corresponds to Figure 1, the actuarial assumptions of a "Whole Life" contract, while there is no agreement whatever between Fig. 2, the needs of the professional man, and Fig. 1.

The question may now be raised, "But is not a substantial insurance sum required, even in retirement, in order to

provide an income for the professional man's wife after his decease, since she normally will outlive him by about seven years?" This need for a widow's income does indeed exist, but it can be provided in a more efficient and economical manner than by means of a principal sum payable on death. This will be discussed later.

(This Article will be Continued in the July issue of the "Journal")

The Provinces

Quebec

An enthusiastic group of McGill staff members and their wives were treated to an advance tour of the dental clinic in the New Montreal General Hospital. The ladies were guests at tea later in the afternoon of April 16, whilst the **Staff members of the Dental Faculty of McGill University** met at the Faculty Club for the annual staff dinner and meeting.

One sad note marred the otherwise happy event in that the Dean, Prescott Mowry, was in the hospital. All wish him a rapid recovery so that he will soon be back at his desk.

The dinner meeting, under the chairmanship of Prof. W. C. Bushell, got off to a fine start with cocktails, and following dinner, Dr. Don Henry gave the staff a review of just what takes place in the "materials" department.

A "spirited" discussion took place concerning the "attitude" of the present day student and it was more or less agreed that some standardization should take place amongst the staff itself. It was this writer's feeling that the problems encountered by the staff are probably no different from those encountered in all dental schools—and probably the same as those experienced by all for a good many years.

Dr. Wilf Johnston reported the tentative plans for the 50th Anniversary of the McGill Dental Faculty to be held in the New Montreal General Hospital on the 18th of October 1955, about which more will shortly be announced in The Journal.

Following a report from Mr. J. Miller, architect concerned with the new clinic, the meeting was adjourned.

The monthly dinner meeting of the **Montreal Dental Club** was held on Monday, April 25, at the Queens Hotel. The speaker for the evening was Dr. Carl Oman, Professor of Operative Dentistry, University of Columbia, New York, whose topic was "Cavity Preparation using Ultrasonic Technique."

Dr. Oman began his talk by delivering a paper on the development, use and procedure of the ultrasonic technique.

The unit was developed from industrial tools and at the present time extensive research is being carried out to determine its efficiency and effects, if any, on the teeth and biological structures.

The unit comprises a handpiece with tools, which are connected to a water and abrasive spray of Al_2O_3 , the latter delivered from an auxiliary pumping system, all controlled by a foot switch. The cutting is accomplished with the vibration of the tool at high frequency and peak acceleration of 100,000 G. on the aluminum oxide paste.

There are numerous differently shaped tools, which can be changed in the handpiece for different cuts needed. One of the great advantages is the ability for one tool to complete the cavity preparation. It can prepare the box in a class (2) preparation, and by turning at right angles prepare the occlusal surface. The margins, walls and floor are highly polished and sharp.

The unit is currently being evaluated by dental schools and private dentists. All types of operative dentistry, surgery, endodontia, root resections are being done, although no final analysis has as yet been reached as regards effects to pulp and surrounding tissue; as far as can be seen there are no detrimental effects, probably since no heat is generated.



Doctor George C. Hare of Toronto addresses an important meeting at the Montreal Endodontia Society. Left to right, Dr. E. S. Dorion vice-president, Dr. D. Shizgal secretary-treasurer, Dr. George C. Hare and Dr. Vincent Tremblay president of the Montreal Endodontia Society.

Results to date seem to indicate:

- (1) Pleasant to patient, no pain, noise, or vibration.
- (2) No need for local anaesthetic in operative procedures.
- (3) Rapid cutting.
- (4) Minimum number of instruments needed.
- (5) Less fatigue on operator.
- (6) Simplifies operating on hypersensitive patients.

Following the delivery of his paper Dr. Oman showed a number of slides of technique, tools, etc., then gave a live demonstration of the unit.

The evening was most informative to all those in attendance, and seems to open a doorway to painless and better operative procedures.

The 4th in a series of telephone extension courses was held on April 4 at McGill University, on "problems in occlusion." Dr. W. Walford acted as moderator.

D. J. M.

A meeting of the **Mount Royal Dental Society** was held Tuesday evening, February 8, at the Mount Royal Hotel. Dr. S. Silver presided and introduced Dr. Bouillon, Superintendent of the Division of Dental Hygiene of Montreal, professor of Dental Hygiene at the University of Montreal, who spoke on "Water Fluoridation."

The presentation by Dr. Bouillon was followed by a discussion period.

Dr. D. T. Shizgal, expressing the sentiments of the Society, thanked the speaker and presented him with a gift as a token of the appreciation of the members.

L. D.

The March all-day clinic of the **Mount Royal Dental Society** featured as guest speaker, Dr. Maury Massler, Professor of Pedodontics, University of Illinois. Dr. I. B. Hyams presided.

Dr. Massler pointed out that in the eval-

uation of modern restorative materials the effects on the pulp must be considered in addition to aesthetics and physical standards, because we deal with living tissues which must be kept alive. The biologically minded dentist, he added, will remember that there is a human being attached to the tooth and that the restorative materials he places over freshly-cut dentin may have a deleterious effect on the pulp, since each dentinal tubule actually contains part of the cell-body of an odontoblast which is left exposed to the material. Dr. Massler stated that, of 31 new filling materials offered for sale in the United States last year, not one had been tested for pulpal reactions. He urged that no new material be used clinically until it had been proved, by proper bio-assay methods, to fulfill biological as well as physical and aesthetic requirements. He added that clinical evaluation alone is insufficient since "pulp-testing" may elicit a positive response in a tooth, the pulp of which is necrotic to within a few millimeters of the apex. Clinically one can see only the terminal stage of pulp necrosis.

Dr. Massler then demonstrated that the pulp is not as delicate as we have been led to believe, and that in many instances it can repair itself, if given a fair chance, even after injury, but that it will succumb to repeated shock if neglected.

Commenting on his research with various lining materials, Dr. Massler stated that zinc oxide-eugenol was found to be a very satisfactory and safe material, being both a sedative as well as an excellent bacteriostatic agent, whereas acid cements could be shown to have untoward effects on the pulp. He suggested that a zinc oxide-eugenol preparation be placed in a deeply carious cavity after excavation for several days before the permanent restoration is completed to allow it to recover from the shock. A series of slides was shown to illustrate the effect of various materials on the pulp. On the question of sterilization of dentine, Dr. Massler stated that there was no agent sufficiently effective, and yet harmless to the pulp, which need be applied to the cavity floor for only a few seconds. Again Dr. Massler recommended zinc oxide-eugenol, since it sedates the pulp as it sterilizes the dentine and can be left in the cavity without damage to the pulp for several days until the dentine can be considered sterilized. Based on this premise, too, the indirect pulpotomy technique described by Dr. Massler provides that pulp amputation be done only after the pulp has been properly sedated and sterilized.

Dr. M. Levitt expressed the thanks of the Society to the speaker.

G. C. B.

Alberta

Dr. W. Ross Upton was elected president of the **Calgary and District Dental Society** on March 21, 1955. He succeeds Dr. Roy Rasmussen.

Other officers elected included Dr. G. C. Swann, vice-president; Dr. M. J. Lipkind, secretary, and Dr. W. A. Nixon, treasurer.

Guest speaker at the meeting was Dr. Gordon Minty, who gave an address on the treatment of children's teeth. He stressed the importance of care of the foundation teeth as a prerequisite to healthy permanent teeth.

Dr. Minty pointed out that early loss of the temporary molar teeth will almost always result in lack of room for the succeeding permanent teeth and therefore every care should be extended children from their earliest years.

The Pensioners' Dental Treatment Service has been operating in Alberta since June, 1947, but still hundreds of people in the province know little of the services it offers to persons of advanced age and small income.

Under the special plan which is offered by the provincial government and the dental profession in Alberta, dental treatment is free to more than 35,000 Albertans including all pensioners of the provincial government, the blind and their wives and dependent children, widows, those receiving mothers' allowances and to old age security pensioners on a means test.

The service, in all its phases, is operated under a monthly per capita grant from the provincial government. The dentists carry out dental treatment under a schedule of reduced fees.

No other plan of this kind is operated on the North American Continent.

From the patients' point of view, the availability of the service is extremely simple. The administrative office of the Alberta Dental association is supplied by the government with a list of names and addresses of those entitled to treatment.

The list is adjusted monthly. A patient merely applies to the dentist of his choice, who notes needs on a chart, and proceeds with treatment as soon as authorization has been granted. In case of emergency arising, no authorization is required prior to treatment.

The regular monthly meeting of the **Calgary and District Dental Society** was held Monday night, April 25, in the ballroom of the Palliser Hotel. This marked the beginning of the Dental Health Week in Alberta. President Roy Rasmussen introduced the

head table guests, Dr. E. P. Scarlett, Chancellor of the University of Alberta; Dr. Andrew Stewart, President of the University of Alberta; Mr. Warren, Superintendent of Calgary Schools; Mr. Cannon, Superintendent of Separate Schools. Mr. Warren then introduced the Principals of the Calgary High Schools and Junior High Schools, who were also our guests.

Dr. John Clay then introduced Dr. Andrew Stewart, the guest speaker.

Dr. Stewart discussed three subjects: 1) General Education, 2) Professional Education, and 3) Dental Education. He described in all three the present state of educational trends, standards and facilities in the province of Alberta. Under the heading of Dental Education, the speaker indicated that there would be no further expansion of facilities in the faculty of Dentistry in the near future in so far as the output of dental practitioners is concerned, but he did indicate that the University of Alberta is strongly in favour of establishing a school for Dental Hygienists.

Dr. Ted Allison thanked the speaker and presented him with a gift on behalf of the members.

Mr. Warren then thanked the Society for inviting the Superintendents and Principals of Schools to attend the meeting.

The notice of motion regarding a change in the constitution with respect to annual dues including the cost of attending meetings was reiterated. It was decided to postpone any action until the Fall.

Dr. Baden Powell explained the committee organization for the C.D.A. Convention in Banff in June, 1956.

Dr. Bill Nixon outlined the activities which will take place during Dental Health Week. Daily newspaper releases and radio broadcasts, talks to school groups, thousands of posters and pamphlets distributed to schools, drug stores and city buses.

The film "Gateway to Health" was shown, and also a film just received called "Dentistry as a Profession."

G. C. S.

The **Lethbridge and District Dental Society** held their April meeting at the El Rancho dining room on Saturday, April 23. This meeting was a special one to start off Dental Health Week and featured two clinicians from Calgary, Dr. John Clay and Dr. Henry Freeland. An afternoon session started at 4:00 p.m. at which each clinician gave us a most interesting description of the dental staff set up in the hospitals in Calgary. Following supper Dr. Clay spoke on "Minor Oral Surgery," and Dr. Freeland talked on "Immediate Dentures." A report on Dental Health Week was given by Dr.

D. A. Rylands. An honorary life membership to the local society was given to Dr. Bill Craig at the dinner and a silver cigarette case was presented to him by Dr. W. Matkin. A good attendance turned out for the meeting and district points of Raymond and Taber were represented.

D. A. R.

Monday evening, April 25, a special supper meeting of the **Edmonton and District Dental Society** was held under the chairmanship of Dr. Roy C. Sills, at the Seven Seas. This was to inaugurate Alberta's Second Annual Dental Health Week, April 25-30.

The theme of this week is to stress prevention of dental disease and in particular is aimed at the care of the children's teeth.

In support of this subject Dr. B. M. MacKenzie addressed the society on Preventative Paedodontics and he discussed a successful technique for treating children in the early age group.

Dr. R. D. Hareyett, specialist in Orthodontics, presented a table clinic featuring a display of various types of cases which were within the treatment scope of the general practitioner to alleviate and correct developing malocclusions.

A color film "Gateway to Health," emphasizing the value of proper nutrition, balanced meals and correct oral hygiene was viewed. This is an excellent film for display to members of a lay group and would be a valuable adjunct to the dentist called upon in the role of a speaker to such a group.

Miss Crystal Macdonald and Mr. Peter Dezam, vocalists, provided a pleasant musical interlude for the members, during the course of the evening.

J. M. S.

Nova Scotia

The regular meeting of the **Halifax County Dental Society** was held in the Nova Scotia Hotel, Halifax, with the President, Dr. W. H. MacNeil, in the chair.

The annual election of officers resulted in the following slate: President, Dr. Ray Epstein; vice-president, Dr. W. R. Coleman; secretary-treasurer, Dr. D. E. MacLachlan; executive member, Dr. S. H. Newman; auditor, Dr. G. A. Chudleigh.

Following the business of the meeting two very excellent films were shown, one depicting the highlights of the career of Sir Winston Churchill, and the other an instructional film on gold inlay work.

The annual meeting of the Nova Scotia Dental Association will take place in Charlottetown during the meeting of the Maritime Dental Association, July 3-5.

H. M. E.

Saskatchewan

The **Saskatchewan Dental Association**, which disbanded 15 years ago, has been revived into a vital organization. Four years ago while at a meeting of the W.C.D.S. in Winnipeg, the Saskatoon Society was selected to set up a slate of officers to organize the association. This executive functioned for two years and then the Moose Jaw Society supplied the officers to date. These executives provided a series of Clinicians and the Telephone course. Under these two executives the interest in the association has been so inspired that a meeting was called for Saskatoon in April. This meeting was well attended. A new constitution was instituted and a new executive elected from the Prince Albert Society. A convention is to be held at Waskesiu in August of 1957.

L. D. H.

Dr. Norman Godfrey, Prince Albert, was elected president of the **Saskatchewan Dental Association** at the annual meeting held in Saskatoon, April 22.

Others elected to the executive were also Prince Albert dentists. First vice-president is Dr. Robert Reid; second vice-president, Dr. J. M. Pourbaix; secretary, Dr. G. H. Janzen and treasurer, Dr. N. R. Fedirko. Retiring president was Dr. Alex Lowery of Moose Jaw.

The convention discussed the general policy of the association and set up a special committee to confer with provincial health department regarding establishment of a dental division of the department.

Other committees set up were one on dental health insurance and another on public relations and grievances.

The meeting tentatively planned to hold the association's 1956 convention at Waskesiu. The convention would be the first held since the Second World War.

Dr. A. E. Chegwin, director of the provincial dental health division, was returned for his second term as president of the **Saskatchewan section, Canadian Public Health Association**.

British Columbia

Elected to the **Council of the College of Dental Surgeons of B.C.** were: Dr. T. H. Johns and Dr. Charles Usher of Victoria; Dr. L. B. Alexander of Haney; Dr. Wm. Miller, Dr. C. M. Whitworth, Dr. G. I. Creasy and Dr. C. R. Hallman of Vancouver; Dr. T. F. Parmley of Penticton and Dr. C. E. Bradshaw of Nelson.

The new Council will assume office on the third Monday in July for a period of two years.

The **Upper Island Dental Society** has been in full swing all year under these officers: President, Dr. A. G. Verchere of Port Alberni; Secretary, Dr. J. P. R. Bateman of Alberni; Program, Dr. G. F. Gemeroy of Courtenay; Entertainment, Dr. J. J. Eakins of Nanaimo.

Meetings have been held in the Island Hall Hotel of Parksville each month. Early in the year Dr. Alex Gunning of Victoria gave an address on Inlay and Amalgam Techniques. Dr. W. A. Nicholson of Nanaimo recently gave a talk on Endodontics preparatory to the last meeting which was addressed by Dr. John Ingle of the Endodontic Department of the University of Washington, who spoke in both the afternoon and evening.

Forty-three members attended the March meeting of the **Victoria and District Dental Society** in the Empress Hotel. The speaker was Mr. Harvey Bailey, whose address was entitled "How to Make Money on the Stock Market."

After a busy year, serious things were put aside on May 3 when a cocktail party before dinner drew a large attendance at the final meeting of the season of the **Vancouver and District Dental Society**.

Dr. James Parr of the Metallurgy Department of the University gave the address of the evening on "Amalgam Filling." An engaging after-dinner speaker, he treated his subject briefly and in a humorous fashion.

Dr. E. Slakov, the membership convener, reported a paid-up membership of 279.

Officers elected for the 1955-56 season are: President, Dr. L. W. Beamish; President-elect, Dr. W. P. Munsie; Secretary, Dr. J. H. Merrell; Board of Directors, Dr. J. G. Ryan, Dr. M. J. Waterman, Dr. J. M. McDougall and Dr. R. K. Lindsay.

D. H. M.

Ontario

Dr. Charles R. Wray, of Beamsville, was elected president of the **Niagara Peninsula**

Dental Association, at a meeting in Welland.

Other officers are: Dr. R. Tranter, Niagara-on-the-Lake, vice-president; Dr. D. Copeland, Grimsby, secretary; Dr. J. Sim, St. Catharines, treasurer. Directors are: Dr. K. Carroll, Port Colborne, Dr. R. Pattison, Welland, Dr. G. F. Burgman, Niagara Falls. Dr. Burgman is the retiring president.

Dr. E. C. McKee, President of the **Peterborough and District Dental Society**, entertained at dinner at Thelgar Lodge, Young's Point.

The Minister of Grace United Church, Peterborough, the Reverend I. G. Pollock, addressed the gathering of 60 people present and mentioned his early parishes in Scotland and South Africa. Dr. Robert Nelson extended the appreciation of the audience and presented a clock to Mr. Pollock.

Representing the Law Society were Mr. and Mrs. Walter Howell; Medical Society, Dr. and Mrs. Louis Zacks, Dr. and Mrs. Shepherd; also present were Rabbi Rabb and Mrs. Rabb and the Reverend Father O'Sullivan, who said Grace. Dr. Harold Craig of Belleville, represented the Bay of Quinte Dental Society; Dr. Peter Willson, the Ontario Northumberland Society. The Board of Directors of the Royal College of Dental Surgeons of Ontario were represented by Dr. and Mrs. W. J. Langmaid of Oshawa, and Dr. and Mrs. J. H. Johnson represented the Dean of the Faculty of Dentistry, Toronto.

A toast to the ladies was given by Dr. D. J. E. Mitchell and replied to by Mrs. M. J. McCartney. Dr. Harold Long toasted the visitors and received reply from Rabbi Rabb. The Faculty of Dentistry was toasted by Dr. Ralph Honey and Dr. J. H. Johnson made reply.

Entertaining during dinner were Mrs. Ralph Smyth and Mr. Mort Knox who sang duets.

Dr. Cameron Craig presented Mrs. Smyth with a dozen roses and gifts to Mr. Knox and the host Mr. James Jones, who accompanied on the Hammond organ.

R. H. C.

General News

Dr. Harold Noyes, dean of the University of Oregon Dental School, Portland, was installed as president of the **American Association of Dental Schools**, at the close of its annual meeting in Chicago. He succeeded Dr. John Buhler, of Atlanta, Georgia, dean of the Emory University School of Dentistry. Chosen president-elect was Dr.

Lee Roy Main, dean of the St. Louis University School of Dentistry. **Dr. Roy Ellis**, dean of the University of Toronto Dental School, was chosen vice-president, and Dr. Robert McNulty, of Los Angeles, dean of the University of Southern California School of Dentistry, was named to the executive council. Dr. Willard Fleming, of San Fran-

cisco, dean of the University of California College of Dentistry, and Dr. Joseph Muhler, of Indianapolis, professor at the Indiana University of Dentistry, were nominated to be the A.A.D.S. representatives on the A.D.A. Council on Dental Education and the Council of the National Board of Dental Examiners, respectively.

The use of ultrasonic dental instruments should be withheld until their practicability and safety is proved by "extensive investigation." This was recommended by the **A.D.A. Council on Dental Research** in a report published in the May issue of *The Journal of the American Dental Association*. "Until there is sufficient evidence available in the form of published and confirmed professional and scientific reports,"

the statement said, "the Council on Dental Research believes it is premature for any general acceptance of the ultrasonic method of cavity preparation and of ultrasonic therapy in the treatment of oral disease. Both of these uses are in the experimental state and patients should be so advised."

Dr. Isaac Schour, of Chicago, associate dean of the University of Illinois College of Dentistry, has been named dean of the college, effective September 1. Dr. Schour will succeed Dr. Allan G. Brodie who is resigning as dean but will remain on the faculty as head of the department of orthodontics. Dr. Schour, who is 55, has been on the faculty of the school since 1924. He received his D.D.S. and his M.S. degree from Illinois, and his Ph.D. degree from the University of Chicago.

In Memoriam

Victor Parent—Dr. Victor Parent died suddenly at his home in Montreal. He was 61.

Born in St.-Elphege, Dr. Parent studied at Nicolet Seminary, St. Laurent College and received his Doctor of Dental Surgery from the University of Montreal in 1920.

The deceased, for more than 25 years, was conductor of the St. Jean de la Croix choir.

From his first marriage, Dr. Parent is survived by his two daughters, Marguerite and Jeannine. Also surviving are: his second wife, Aline Martin; two daughters, Madeleine and Ginette, and two sons, Robert and Gilles.

Arthur Alexander Lockhart—Dr. Arthur Alexander Lockhart of Summerside, P.E.I., passed away on April 4, 1955 in the Prince County Hospital. He was 67.

Dr. Lockhart was born at St. Eleanors, educated at the local school and Prince of Wales College. After obtaining his dental degree at Tufts College in Boston, he practised first in Kensington and then in Summerside.

Dr. Lockhart was a member of the Board of Stewards of Trinity United Church, a member of Kensington Masonic Lodge and a past president of the Rotary Club of Summerside.

Surviving Dr. Lockhart are his wife, two sons, Roy of Montreal and Frank of Mon-

ton, and also a daughter, Mrs. A. S. Wortley, of California.

J. A. Carriss—Dr. J. A. Carriss of Prince Albert passed away while attending a banquet. He was 62.

Dr. Carriss was born in Manitou, Man. In 1917 he graduated from the Chicago College of Dental Surgeons and began practising in Prince Albert. He was a member of the Masonic Lodge and was a former Kiwanian.

Dr. Carriss was widely known for raising Chinchillas and had received many prizes in this field across Canada. He was a licensed radio "Ham."

Surviving Dr. Carriss are: his wife, Helen, and three daughters, Mrs. J. S. Coombes, Edmonton; Mrs. L. J. Elliott, and Mrs. C. W. Bridge, both of Vancouver.

Charles Hoyland Matthison—Dr. Charles H. Matthison died in Vancouver on March 31 at the age of 74.

Dr. Matthison was born in Birmingham, England, and emigrated to Brandon, Manitoba, with a brother in 1907. They came to Vancouver three years later.

A resident of Vancouver for 45 years, he was noted for ability as a thespian, especially in Shakespearean roles. He was a member of the former Vagabonds' Club and the Shakespeare Society.

Surviving are his wife; a son, Arthur, Vancouver; a daughter, Mrs. Maxwell Macleod, Nelson; and a brother and sister.

George P. Matthewman—Dr. George P. Matthewman passed away in Ottawa on April 26, 1955. He was 88.

After his graduation from the University of Toronto, Dr. Matthewman practised dentistry in Ottawa until 1950.

For many years he was an officer in the 43rd Regimental Association, D.C.O.R.

Dr. Matthewman is survived by his wife, the former Mary H. Heney; a son, Lt.-Col. Gerald Matthewman, M.C. of South Hull, and a daughter, Mrs. Harvey B. Carlaw of Toronto.

Ernest Edward Bruce—Dr. Ernest Edward Bruce passed away suddenly at his home in Kincardine, Ontario. He was 72.

Dr. Bruce received his early education in Listowel and in 1906 graduated from the Royal College of Dental Surgeons. He practised in Kincardine. Dr. Wm. M. Bruce, his father, was a dentist and Dr. W. G. Bruce, his son, is presently practising in Kincardine.

In December 1918 Dr. Bruce was elected to the Board of the R.C.D.S. and was President of the Board of Directors from May 1925 to May 1927. He was a Past Master of the Kincardine Masonic in 1921 and a District Deputy in 1930-31. Dr. Bruce served on Public and High School Boards and was an Elder of the United Church. He would have been eligible for Honorary Membership in the R.C.D.S. on January 1, 1956.

Surviving Dr. Bruce are: his wife, the former Blanch Graham; two sons, W. G. Bruce and Donald Bruce of Kincardine; a daughter, Mrs. G. R. Bell, London, and two brothers, M. G. Bruce, Toronto, and V. N. Bruce, Ottawa.

Gerald J. Gabriel—Dr. Gerald J. Gabriel of Weyburn, Saskatchewan, passed away very suddenly on April 5.

Born in Brooklyn, New York, in 1903 he received his early education in Plymouth, Pennsylvania. Dr. Gabriel graduated from the University of Pennsylvania in Arts and Dentistry, subsequently taking Post-graduate work in Children's Dentistry in the same school.

Engaging in private practice for ten years Dr. Gabriel served for five years with U.S.

Army Dental Corps during the late war, retiring with the rank of Captain.

Upon returning to private practice he later moved to Saskatchewan accepting a position with the Weyburn Health Region as staff dentist for 2 years, later transferring to the position of staff dentist with the Training School of the Weyburn Mental Hospital where he was very ably serving at the time of his death.

Dr. Gabriel was a 32 degree Mason and a Shriner and a keen sports enthusiast.

He is survived by a brother, Dr. A. H. Gabriel of Plymouth.

William Thomas McGorman—Dr. William Thomas McGorman of Port Arthur passed away on May 8, 1955 after a brief illness. He was 92.

Born in the Township of Mornington, Dr. McGorman received his early education in Toronto and in 1893 graduated from the Royal College of Dental Surgeons.

One of the oldest practising dentists in Canada, Dr. McGorman first practised in St. Mary's and later moved to Port Arthur where he continued his work until April of this year. He was an honorary member of the R.C.D.S.

Dr. McGorman was a Past President of the Thunder Bay Dental Association, had been a member of the Board of Education at Port Arthur for 18 years. He was Treasurer of Trinity United Church for 33 years.

Dr. McGorman's wife predeceased him some years ago.

Clement Windsor—Dr. Clement Windsor passed away in London, Ontario, on May 10, after a short illness. He was 78.

Born in Chatham, he received his early education in London and in 1900 graduated from the Royal College of Dental Surgeons. Dr. Windsor practised dentistry in London.

He was a member of St. John's Lodge, No. 209a, A.F. & A.M., the Scottish Rite and the London Hunt and Country Club. He was an Honorary Member of the R.C.D.S.

Dr. Windsor is survived by his wife, Tena, three sisters, Mrs. H. H. Cullen and Misses Eliza and Fannie Windsor, all of London; two brothers, Nelson, South Bend, Indiana, and George, Poplar Bluff, Missouri.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1956	Banff, Alberta	June 3rd—6th
1957	Winnipeg, Manitoba	June 23rd—26th

FUTURE EVENTS

<i>Date</i>	<i>Function</i>	<i>Location</i>	<i>Officer</i>	<i>Address</i>
June 26-29	Western Canada Dental Society	Regina	Dr. W. K. Martin	708 Broder Bldg. Regina
July 4-6	Maritime Dental Associations	Charlottetown	Dr. D. T. Waye	130 Richmond St. Charlottetown
July 11-14	American Dental Soc. of Europe	Amsterdam	Jas. P. Molony	110 Harley St. London W1, Eng.
Aug. 14-20	Federation Dentaire Internationale	Copenhagen	W. Riis Klausen	1 Alhambravej, Copenhagen V.
Oct. 18	50th Anniversary of Dental Alumni of McGill University	Montreal	Dr. Bruce Ward	1414 Drummond St. Montreal
Oct. 19-24	Montreal Dental Club Annual Fall Clinic	Montreal	Dr. Bruce Ward	1414 Drummond St. Montreal.
Oct. 23-27	American Institute of Dental Medicine	Palm Springs California	Miss Marion G. Lewis	2240 Channing Way Berkeley 4, Cal.
Oct. 24.	Academy of Dentistry Opening Dinner	Toronto	Dr. Robt. Marshall	200 St. Clair W. Toronto.
Nov. 25	Academy of Dentistry Winter Clinic	Toronto	Dr. Robert Marshall	200 St. Clair W. Toronto.

SHORT GRADUATE COURSES

<i>Date</i>	<i>Course</i>	<i>Location</i>	<i>Address</i>
Sept. 19-23	Occluso- Rehabilitation	Tufts College Dental School	Dr. Louis Alexander Cohn, Tufts College Dental School, Div. of Postgraduate Studies, 136 Harrison Ave., Boston 11, Mass.
Jan. 22	Orthodontics	Temple University	Dr. Louis Herman, Dir. of Postgraduate Studies, Temple University School of Dentistry, 3223 North Broad St., Philadelphia, Penn.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Etude sur les manifestations buccales des déficiences vitaminiques

par ROSA GAK, D.D.S., Montréal

INTRODUCTION

Les maladies comprises sous le terme d'avitaminoses, du moins les plus importantes d'entre elles, sont connues depuis fort longtemps: le béri-béri et le scorbut, par exemple, ont été observés et décrits par les civilisations anciennes. Leur rapport avec une alimentation déficiente a même été remarqué à de nombreuses reprises. Toutefois, la notion de vitamine, et donc d'avitaminose, est une acquisition récente de la médecine, qui date du début du siècle.

Casimir Funk donna le nom de vitamine, en 1912, à un principe contenu dans le son de riz, qui se montre capable d'empêcher l'apparition de paralysies chez la poule et le pigeon alimentés exclusivement de riz décortiqué. Trois ans plus tard, MacCollum et Davis, étudiant les effets sur l'animal de différents régimes synthétiques, isolèrent une substance, le facteur hydrosoluble B, analogue à la vitamine antinévrétique de C. Funk. De

l'étude simultanée des avitaminoses humaines ou animales et des rations alimentaires, se dégagèrent alors les principales vitamines.

Celles-ci apparaissent comme des facteurs indispensables à la vie, agissant en petites quantités devant être apportées par le régime alimentaire, car dans la plupart des cas, l'organisme est incapable d'en faire la synthèse. Des travaux ultérieurs ont permis d'isoler un nombre croissant de vitamines; il en existe dix-sept à l'heure actuelle et tout permet de penser que cette liste n'est pas close.

On classe habituellement les vitamines suivant leurs caractères de solubilité, en deux groupes:

I. Les vitamines hydrosolubles:

Le complexe B: vitamine B₁ ou thiamine; B₂ ou riboflavine; B₆ ou pyridoxine, PP ou amide nicotinique; acide folique; B₁₂ ou facteur antipernicieux; l'acide pantothénique; l'inositol; la biotine; l'acide para-amino-benzoïque; la choline.

La vitamine C ou acide ascorbique.

La vitamine P, de résistance capillaire.

II. Les vitamines liposolubles:

La vitamine A; la vitamine D; la vitamine E; la vitamine K.

Nous allons décrire les vitamines qui ont une relation directe avec le dentiste par les manifestations buccales de leurs déficiences dans l'organisme.

LA VITAMINE A

La vitamine A est essentiellement un facteur de croissance et d'intégrité cellulaire; elle est particulièrement utile pour assurer la vitalité des muqueuses. C'est un dérivé des pigments caroténoïdes des plantes. Dans le règne végétal, elle est représentée par le carotène (provitamine A) qui se transforme dans l'organisme de l'homme et des animaux, en vitamine A. La transformation du carotène en vitamine A se fait dans le foie; elle exige non seulement l'intégrité des fonctions hépatiques, mais aussi celle de la thyroïde. On connaît expérimentalement l'hypovitaminose A des rats thyroïdectomisés. L'étude du cycle du carotène nous permet de comprendre l'existence d'une carence nutritive secondaire à des lésions intestinales ou hépatiques à côté de la carence d'apport, ou avitaminose d'origine alimentaire.

La lésion caractéristique de l'avitaminose A est une altération très particulière des épithéliums; il se produit successivement une atrophie épithéliale, une prolifération des cellules basales, enfin la différenciation d'un nouvel épithélium sous une forme stratifiée et kératinisée. Cette métaplasie kératinisante se retrouve au niveau des épithéliums oculaires, digestifs et respiratoires, dans les organes formateurs de l'email. A la peau, la lésion aboutit à l'obstruction des conduits glandulaires et au développement d'une folliculite. Cette lésion épithéliale crée une susceptibilité accrue des tissus à l'égard des infections; c'est ainsi que la vitamine A est apparue à Mellanby comme la vitamine "anti-infectieuse". Il convient cependant de noter que l'administration de vitamine A n'augmente pas chez un sujet normal sa résistance aux infections.

Les symptômes les plus évocateurs de l'avitaminose A sont l'héméralopie et la xérophtalmie.

L'héméralopie, ou "cécité nocturne" est un trouble subjectif qui consiste dans l'apparition d'une cécité dans la demi-obscurité chez des sujets qui voient normalement à la lumière du jour. Le début du trouble est souvent inaperçu du malade lui-même; et pourtant, dès ce stade initial, l'ophtalmologiste décèle facilement une diminution de la sensibilité au bleu et un rétrécissement du champ visuel pour les couleurs. Le mécanisme de l'héméralopie est le suivant: la vision dans l'obscurité est liée à la formation, dans la rétine, d'un pigment photosensible, le pourpre visuel ou rhodopsine, lequel lors d'un éblouissement, même de faible intensité, se transforme brusquement en jaune visuel, ou rétinène, qui provoque l'excitation du nerf optique. Le rétinène est partiellement reconverti en pourpre visuel par une réaction réversible, mais une portion cependant du jaune visuel donne des produits de dégradation qui doivent être synthétisés en pourpre visuel; cette synthèse exige l'intervention de la vitamine A.

La xérophtalmie. Les signes initiaux sont souvent masqués par une conjonctivite surajoutée, liée à une infection banale. Le signe d'alarme est l'apparition d'un dépoli de la portion découverte de la conjonctive bulbaire, qui devient plus blanche, plus sèche, finement grenue. Non traitée, la lésion oculaire va passer par deux stades d'inégale gravité: xérosis conjonctival, xérosis cornéen. La cornée perd son éclat brillant: elle ne se laisse plus humecter par les larmes, elle devient mate et opaque, de couleur jaunâtre; puis elle s'ulcère et se perfore, entraînant une infection de la chambre antérieure, une hernie de l'iris et, éventuellement, une panophtalmie. Les nourrissons atteints de xérophtalmie présentent des troubles graves de la nutrition. Leur courbe pondérale s'arrête ainsi que leur croissance staturale. Ils offrent à l'examen des infections variées du cavum et des voies respiratoires supérieures. La fièvre s'al-

lume, avec son cortège de signes infectieux masquant l'origine nutritive de la maladie. Dans l'ensemble, l'évolution de la xérophtalmie du nourrisson est grave. Toute l'évolution, à partir du moment où la cornée est atteinte, peut se faire en quelques jours. La mort est possible; inversement, la thérapeutique par la vitamine A détermine une amélioration d'une rapidité étonnante.

Le xérosis de l'adulte n'est fréquent qu'en Extrême-Orient. Aux signes oculaires, s'associent habituellement un enrouement lié à un xérosis laryngé. Les troubles digestifs sont intenses, essentiellement intestinaux. La fatigue générale est extrême.

Certaines lésions cutanées ont été rattachées à l'avitaminose A. Ce sont de folliculites un peu particulières, faites de papules hyperkératosiques, se détachant sur une peau sèche, calleuse et pigmentée, qui peuvent guérir complètement par la vitamine A.

Des lésions dentaires qui ont été produites expérimentalement sont les suivantes:

- atrophie de l'organe formateur de l'émail, puis altération des odontoblastes dont les fonctions sont troublées;
- retard dans l'éruption des dents permanentes;
- alignement irrégulier, surtout des incisives inférieures;
- hypocalcification des procès alvéolaires et des dents permanentes;
- lésions de dégénérescence nerveuse, portant en particulier sur le trijumeau et ses branches;
- développement anormal des tissus péri-dentaires;
- une certaine prédisposition à la leucoplasie.

Les principales sources de vitamines A sont les huiles de poissons, en particulier l'huile de foie de flétan, l'huile de foie de morue. Le foie, les oeufs, le beurre en renferment des quantités notables. Les sources de carotène sont les carottes, tomates, abricots, persil, épinards, etc.

C'est par voie digestive que la vitamine A agit le mieux et plus simplement. L'administration parentérale n'a guère d'indication. La posologie comporte l'ad-

ministration de fortes doses (dans le cas d'infection de Vincent, 50.000 unités par jour pendant 30 jours, en diminuant progressivement jusqu'à 15.000 unités).

Des précautions doivent être prises pour empêcher l'hypervitaminose.

LA VITAMINE B

La vitamine B renferme plusieurs principes vitaminiques différents. Ils se caractérisent par leur solubilité dans l'eau et par leur rôle physiologique (qui n'est pas démontré pour tous): ils entrent, en effet, dans la constitution de divers systèmes enzymatiques. Ces vitamines n'ont pas toutes la même importance. Les principales sont la vitamine B₁ ou thiamine; la vitamine B₂ ou riboflavine et la vitamine PP ou antipellagreuse.

La vitamine B₁ ou thiamine.

C'est la première vitamine qui ait été isolée. La vitamine B₁ se trouve en grande quantité dans les levures, dans la cuticule des graines de céréales et de légumineuses. Une alimentation dépourvue de vitamine B₁ provoque l'apparition du béri-béri, maladie des mangeurs de riz poli, répandue en Extrême-Orient.

Le début de l'avitaminose est marqué par des troubles digestifs. Puis apparaissent les éléments de la triade caractéristique du béri-béri: la polynévrite, l'œdème, l'insuffisance cardiaque. Les lésions buccales ne sont pas distinctives. Parfois apparaissent la gingivite et l'œdème de la muqueuse, accompagnant une névralgie faciale due à la déficience de thiamine.

Actuellement, on emploie la thiamine en traitement de la névralgie du trijumeau, dans le malaise du joint temporo-mandibulaire, en doses quotidiennes de 3.000 à 35.000 unités internationales (10 à 100 mgr.) par voie parentérale pendant une période de deux semaines.

La vitamine B₂ ou riboflavine

La vitamine B₂ appartient au groupe de flavines qui sont des pigments jaunes. Elle joue un rôle très important dans la respiration cellulaire; combinée à l'acide phosphorique, elle constitue le co-enzyme

d'une puissante diastase d'oxydo-réduction, le ferment jaune de Warburg. Les sources de riboflavine sont la levure de bière, les aliments d'origine animale, le foie, les reins, les oeufs, le lait, les poissons.

Les troubles engendrés par la carence en riboflavine sont de connaissance récente: l'avitaminose B₂ humaine s'accompagne presque toujours d'une carence portant sur d'autres éléments du complexe B et peut être associée à une autre avitaminose (pellagre ou sprue).

Les manifestations cliniques de l'avitaminose B₂ ont été précisées en particulier par Sydenstricker. Elles comprennent des lésions oculaires, des manifestations cutanéomuqueuses et des troubles de l'état général.

Les signes oculaires consistent essentiellement en une vascularisation cornéenne de cause inconnue, non provoquée par une kératite. Il se développe une congestion importante des vaisseaux de la conjonctive, particulièrement marquée au niveau du fornix, et on voit les capillaires néoformés pénétrer la cornée, s'y anastomoser à sa surface sous forme de bandes qui constituent de véritables plexus.

Les lésions labiales sont précoces: sur les commissures labiales apparaissent les fines fissures douloureuses, elles s'énlargissent, s'infectent. Cette chéilite angulaire a été décrite depuis longtemps sous le nom de perlèche.

La langue est habituellement dépaillée, lisse, rouge violacée.

Les lésions cutanées, plus inconstantes, sont caractérisées par leur siège et leur aspect. Elles atteignent la partie médiane du visage, autour des orifices nasaux et de la bouche.

Le traitement consiste dans la correction de la diète et l'administration de la vitamine B₂, soit sous forme de levure, soit sous sa forme cristallisée. La posologie varie, suivant la gravité des symptômes, entre 5 à 25 mg. par jour, par voie buccale.

Etant donnée la fréquence avec laquelle l'ariboflavinose est associée à la sprue et

à la pellagre, la vitamine B₂ doit être également prescrite dans ces deux affections.

La vitamine PP.

La vitamine PP (préventive de la pellagre) fut isolée chimiquement par Elvehjem, en 1936, et identifiée par lui à l'amide nicotinique. Ces travaux avaient été rendus possibles grâce aux expérimentations remarquables de Goldberger et de ses collaborateurs qui, les premiers, démontrèrent, de 1915 à 1925, la nature avitaminique de la pellagre et découvrirent les aliments contenant la vitamine préventive de cette affection, qu'il dénommèrent "vitamine PP". La pellagre, cependant, était connue depuis plus de deux siècles.

La vitamine PP est abondante dans la viande, la levure de bière, le jaune d'oeuf. Son rôle physiologique est important. Elle contribue à assurer le fonctionnement normal du tube digestif et du système nerveux central.

La pellagre, ou plutôt le syndrome pellagrique, caractérisé par des érythèmes, des troubles digestifs et des troubles nerveux (moteurs et psychiques), est considérée actuellement comme une avitaminose complexe où peuvent intervenir des déficiences en vitamines A, C, D et les vitamines du complexe B, mais dans laquelle la carence en vitamine PP est prépondérante. Comme dans le syndrome scorbutique, les troubles buccaux y sont importants au point que les premiers auteurs italiens qui, au XVIII^e siècle, ont décrit la pellagre, l'ont appelée, les uns "lèpre scorbutique" et les autres "scorbut alpin".

Stomatite pellagreuse. Elle débute généralement par une sensation de brûlure accrue par l'absorption d'aliments acides ou chauds, et peut intéresser toute la muqueuse buccale et pharyngée, qui est d'un rouge intense. Les lèvres sont sèches et parfois crevassées; les gencives s'oedématisent et saignent, prenant le même aspect que dans le scorbut. Ça et là apparaissent des ulcérations aphtoïdes, particulièrement persistantes, résistant à

tous les caustiques habituels, mais guérissant en 48 heures sous l'influence du traitement nicotinique. Ces pseudo-aphtes, que leur couleur plus grise distinguerait des aphtes véritables, d'aspect beurre frais, sont parfois très volumineux, même géants. Ils sont surtout particuliers par leur multiplicité et leur persistance. L'examen microscopique révèle une abondante flore fusospirillaire, hôte inévitable de toutes les lésions buccales.

La glossite. Tous les auteurs, même les plus anciens, insistent surtout sur l'état caractéristique de la langue, dû à une désépithélisation de la muqueuse. L'oedème et la rougeur qui commencent sur les bords de la langue, l'envahissent ensuite dans sa totalité. C'est une rougeur violente, d'une teinte vermillon très spéciale. L'état des papilles est très variable: tantôt la langue est framboisée, ailleurs elle est fissurée ou elle est lisse, dépapillée.

L'érythème pellagreux est le plus caractéristique de tous ces signes. Les régions touchées sont les régions découvertes: la face dorsale des mains, les parties exposées du cou, des bras, la face. L'érythème pellagreux est fait essentiellement de deux éléments: l'oedème et la congestion qui lui donnent un aspect érysipéleux. La peau est lisse, rouge vif, puis, après quelques jours, rouge-cinabre; après quelques semaines, l'érythème se ternit, se ride, se gerce. Il se produit une véritable exfoliation en larges lambeaux cohérents. La peau reste sèche, rugueuse, pigmentée. C'est cette rugosité de la peau (pelle agra) qui a donné son nom à la maladie.

Traitement.

La vitamine PP est le traitement spécifique de la pellagre. On dispose de comprimés d'amide nicotinique, habituellement dosés à 0 gr. .05. Les ampoules injectables sont dosées à 0 gr. 10. La voie d'administration est essentiellement la voie buccale. Dans les formes graves, il faut donner des doses considérables: 1 gr. de nicotinamide par jour pendant 4 jours; ultérieurement, on reviendra à la dose

de 0 gr 5 pendant une semaine. Dans les formes bénignes, la dose utile est moins forte: de 0 gr 25 à 0 gr 50 par jour.

En dehors de l'anicotinoase, l'amide nicotinique a été utilisé dans un certain nombre de cas: certaines pyorrhées alvéolaires particulièrement tenaces, certaines glossites, des stomatites médicamenteuses sont améliorées par la vitamine PP.

La nicotinamide a été employée avec succès dans des cas d'engelures et chez l'enfant, d'acrodynie, utilisant sa propriété vaso-dilatatrice.

LA VITAMINE C.

La carence en vitamine C détermine le scorbut, affection bien connue depuis le XIII^e siècle pour les ravages qu'elle provoqua parmi les armées des expéditions lointaines et parmi les navigateurs. La vertu curative et préventive des fruits frais est elle-même de connaissance ancienne (Nicolas Venette, 1671; Lind, 1757). Mais la nature carencielle du scorbut, entrevue depuis le début du XX^e siècle, ne fut établie définitivement qu'en 1928, lorsque Szent-Gyorgyiisola des oranges et du citron, un principe antiscorbutique: l'acide ascorbique, dont la synthèse fut réalisée en 1933 par Reichstein.

L'acide ascorbique, par sa structure, s'apparente aux hexoses. C'est un puissant réducteur; il joue dans l'organisme le rôle de transporteur d'hydrogène et, à ce titre, intervient dans les processus d'oxydo-réduction; ses propriétés sont détruites par la chaleur. Absorbé par la muqueuse intestinale, l'acide ascorbique se retrouve dans la circulation générale et se répartit de façon inégale dans les différents tissus: la cortico-surrénale (140 mg. pour 100 gr), l'hypophyse antérieure (126 mg. pour 100 gr), la médullo-surrénale (94 mg. pour 100 gr) et le corps jaune en renferment des quantités importantes. Par contre, on n'en trouve que 1.6 mg. dans le muscle; 1 mg. pour 100 cm³ dans le sang. Mais il n'y a pas véritablement de stockage tissulaire et dès la disparition de la vitamine C du ré-

gime alimentaire, les réserves vitaminiques s'épuisent rapidement.

La plupart des animaux font la synthèse de l'acide ascorbique, probablement à partir de l'acide glycuronique. L'homme, comme le singe et le cobaye, ne peut effectuer cette synthèse. Il doit trouver la vitamine C dans son alimentation. Les sources principales de vitamines C sont les végétaux, et particulièrement les fruits et les légumes frais et crus. Parmi les plus riches, citons le poivron, le persil, le pois mange-tout, le cresson, l'orange, le citron, la fraise, la groseille, la tomate. Les besoins de l'homme en vitamine C s'élèvent à 75 mg. par jour environ.

La carence en vitamine C peut être observée ou relevée comme résultant de conditions alimentaires particulièrement mauvaises (les cas observés ou rencontrés encore pendant les deux dernières guerres, sur le front oriental) mais elle peut se rencontrer également avec un régime normal, ayant comme causes des troubles de l'assimilation tissulaire de la vitamine absorbée, soit une défectuosité dans la traversée hépatique.

Le rôle physiologique de l'acide ascorbique est encore imparfaitement connu: les faits les plus importants à cet égard ont été rapportés par l'étude des avitaminoses spontanées et expérimentales que l'on envisagera plus loin. La vitamine C, vraisemblablement en tant que transporteur d'hydrogène, intervient dans la formation du collagène, c'est-à-dire de la matière fondamentale de l'organisme: c'est pourquoi la carence en acide ascorbique détermine, comme on va le voir, des modifications de tous les tissus conjonctifs, en particulier celui des os, des dents, des vaisseaux. Il est d'ailleurs possible qu'un autre facteur, la vitamine C₂ ou P, intervienne dans la constitution de la paroi vasculaire et, de ce fait, dans le maintien de la résistance capillaire. La vitamine C aurait également une action sur l'hématopoïèse, mais celle-ci est encore imprécise.

L'avitaminose C se présente sous deux aspects très différents, selon qu'elle survient chez les adultes ou les nourrissons.

Le scorbut de l'adulte

Il s'observe chez les individus soumis à une alimentation constituée de produits de conserve et dépourvue de fruits et de légumes frais. On n'observe plus guère actuellement que des formes frustes de cette avitaminose. Le début de l'affection est, en règle générale, très progressif; le sujet qui est en état de préscorbut, présente durant de longues semaines une asthénie intense, des douleurs lombaires, une sécheresse particulière de la peau, des gencives pâles et légèrement saignantes. Les troubles s'aggravent rapidement et l'aspect historique du scorbut est alors réalisé; il se caractérise par une gingivite, des hémorragies, une anémie, des troubles de l'état général.

La gingivite. C'est une des manifestations fondamentales de l'avitaminose C. La gingivite se traduit tout d'abord par une tuméfaction importante des gencives qui sont gonflées, rouges, noirâtres ou violacées, saignantes; puis apparaissent des bourgeons charnus qui se développent entre les dents, saignent au moindre contact, et des ulcérations nécrotiques. A un stade avancé, il se forme autour des dents, qui se déchaussent et qui tombent, un bourrelet fongueux et partiellement nécrotique; des taches ecchymotiques parsèment les piliers et le voile du palais. L'haleine est très fétide, la souffrance atroce; les douleurs intenses interdisent toute alimentation. Parfois même la nécrose gagne les maxillaires.

De cette gingivite grave, Jacques Cartier, qui l'observa pendant son hivernage dans la baie du Saint-Laurent, donne un tableau saisissant:

"A tous, dit-il, venait la bouche si infecte et pourrie par les gencives, que toute la chair en tombait jusqu'à la racine des dents, lesquelles tombaient presque toutes."

Il est à noter que le développement de la gingivite scorbutique est favorisé par le mauvais état de la bouche et des dents, alors que la maladie est minime chez les édentés.

Le rôle de l'hygiène buccale dans le développement de la gingivite scorbutique

tique a été démontré par les expériences faites sur des volontaires, étudiant de la Northwestern University Medical School. Ce groupe de douze étudiants a été soumis à une diète privée de vitamine C pendant sept mois. Leur bouche, avant et pendant l'expérience, ont été maintenues en parfait état et aucun signe d'inflammation ou saignement des gencives n'était remarqué. De ce fait, on a conclu que la carence en vitamine C pendant une période de sept mois chez de jeunes adultes ayant une bonne hygiène buccale, ne provoque pas de symptômes buccaux.

Les hémorragies.

Les hémorragies gingivales ne représentent qu'une des multiples localisations d'un syndrome hémorragique qui se montre constant au cours de l'avitaminose C. Ce syndrome hémorragique du scorbut ne s'accompagne d'aucune anomalie de la crase sanguine. C'est là un caractère très spécial au scorbut. La coagulation est à peine un peu retardée, le temps de saignement et le chiffre de plaquettes sont normaux. Le signe du lacet lui-même, qu'il est classique de décrire dans l'affection, manque en fait dans un grand nombre d'observations.

Les hémorragies cutanées sont les plus fréquentes, elles apparaissent sous forme de pétéchies saignant de façon remarquable autour des follicules pileux, donnant à la peau l'aspect d'un piqueté hémorragique. Celui-ci siège, le plus souvent, sur les membres inférieurs.

Les hémorragies musculaires se localisent le plus souvent dans les muscles de la cuisse et du mollet. Très douloureuses, elles gênent considérablement la marche et se traduisent par des tuméfactions circonscrites et dures, situées en plein muscle.

Les hémorragies sous-périostées s'observent presque exclusivement à l'extrémité inférieure du fémur et au niveau des cartilages de conjugaison des côtes. Leur localisation est déterminée par l'existence, dans la zone sous-périostée, d'une perturbation de l'ossification; l'ostéoporose diffuse que l'on constate à

l'examen radiologique en est un témoignage.

L'altération de l'état général

Elle est importante, proportionnée à la gravité du cas. La fièvre se maintient entre 38 et 39°, l'anémie est intense l'asthénie extrême. Le malade est confiné au lit, ne prenant plus d'aliments sombrant dans une torpeur progressive. Parfois un rythme de galop, des signes de dilatation viennent traduire l'altération du myocarde.

Ces formes sévères du scorbut ne se rencontrent plus guère. Les avitaminoses C actuelles se traduisent par une symptomatologie fruste où domine l'un des symptômes que l'on a décrits; leur évolution est dépourvue de gravité.

Le scorbut du nourrisson.

Individualisé et décrit pour la première fois par Barlow en 1833, le scorbut infantile s'observe chez les enfants soumis à des régimes artificiels (lait modifié ou conservé, farines). Il ne s'observe jamais chez l'enfant nourri au sein. Il survient, le plus souvent, chez les nourrissons âgés de six à dix-huit mois, ne s'observe pas avant l'âge de six mois. Cette règle est inexplicable: on ne peut invoquer la persistance dans l'organisme de vitamine C fournie par la mère, car l'acide ascorbique est éliminé et ne peut être accumulé dans l'organisme; on a pensé que le nourrisson était capable de faire la synthèse de l'acide ascorbique, mais ceci n'est pas démontré.

Le scorbut survient de deux à trois mois après l'installation de l'alimentation carencée. Il se traduit par des symptômes analogues à ceux du scorbut de l'adulte: gingivite, hémorragies, anémie, altération de l'état général. Mais le tableau clinique est ici dominé par des douleurs osseuses extrêmement intenses, en rapport avec la formation d'hématomes sous-périostés.

Le scorbut infantile ne s'accompagne pas de lésions gingivales si l'enfant n'a pas de dents; il peut avoir des ecchymoses buccales, mais elles siègent alors sur les amygdales ou le voile. Si, au contraire,

l'enfant a des dents, il présentera les mêmes manifestations buccales que l'adulte, mais à un degré moindre. Ces lésions consistent en suffusions sanguines, plus ou moins nombreuses et étendues, et en un bourrelet violacé plus ou moins saillant, recouvrant parfois les dents, saignant au plus léger contact et généralement très douloureux.

L'association de ces lésions avec une paraplégie douloureuse permet d'affirmer le diagnostic du scorbut infantile.

Le scorbut expérimental

Particulièrement intéressante au point de vue stomatologique est l'étude du scorbut expérimental. De nombreux auteurs ont réalisé le scorbut chez les animaux par un régime approprié. Weil et Mourigand l'ont étudié chez le cobaye et ont constaté qu'il était tout-à-fait comparable au scorbut humain; il présente les mêmes symptômes, mais cependant la gingivite est rare. La durée en est du reste beaucoup plus courte, puisque le cobaye meurt en 25 jours environ. Zitva et Wells ont étudié l'état des dents chez les singes et les cobayes atteints de scorbut: d'après ces auteurs, le plus léger degré du scorbut décelable à l'autopsie s'accompagne toujours de modifications microscopiques dans la structure des dents et dans les cas avancés d'une résorption à peu près complète du ligament alvéolaire.

Les mêmes études sur des rats ont donné des lésions osseuses et des troubles profonds de la structure des dents (persistance de fibres de Korff, élargissement de la zone dentogène, vacuoles abondantes dans la portion périphérique de la pulpe, etc.).

Ces faits, dont certains peuvent être discutés, présentent cependant dans leur ensemble un intérêt de premier ordre, car ils montrent qu'un régime déficient en vitamines produit chez les animaux, et surtout chez les jeunes, des modifications des tissus dentaires.

Mécanisme physiopathologique du scorbut

Les lésions histologiques du scorbut humain et expérimental portent essentiel-

lement sur les tissus mésenchymateux, mais l'on ne sait pas de façon précise de quelle manière agit la carence en acide ascorbique.

Les données histologiques confirment les faits cliniques; il existe de nombreuses hémorragies intramusculaires, sous-cutanées, sous-périostées; le tissu fondamental de l'os est raréfié. A la vérité, tous les tissus conjonctifs sont altérés: on n'y retrouve plus les fibrilles et le collagène qui en constituent les éléments fondamentaux. Le scorbut est essentiellement une maladie de la substance intercellulaire.

Traitement de l'avitaminose C

L'administration de fruits frais ou d'acide ascorbique prévient et guérit l'avitaminose C.

Il suffit d'ajouter à l'alimentation du nourrisson soumis à un régime de lait conservé, 2 à 4 cuillerées à café par jour de jus de citron ou d'orange pour prévenir l'avitaminose. On peut également administrer de l'acide ascorbique synthétique à la dose de 20 à 30 mg. par jour.

Chez l'adulte, un régime varié et équilibré prévient toute avitaminose. Il est bon d'administrer la vitamine C sous forme naturelle ou synthétique chez les dyspeptiques susceptibles de présenter une carence d'absorption: l'alcalinité du contenu gastrique favorise l'oxydation de la vitamine C, donc son inactivation.

Dans le cas d'un scorbut déclaré, on donnera 2 à 6 comprimés par jour de vitamine C synthétique, dosés à 0 gr .05. Ce n'est que dans les cas graves que l'on est amené à utiliser la voie intramusculaire ou intraveineuse. Il est recommandé d'associer à ce traitement l'administration des vitamines B₁, PP et D, car il s'agit très souvent de multicarences.

LA VITAMINE D

L'avitaminose D est un des mécanismes pathogéniques essentiels du rachitisme. Le rôle antirachitique de certains aliments, en particulier l'huile de foie de morue, de thon, de raie, est connue de longue date. Le rôle de la lumière, de

certaines aliments antirachitiques furent confondus dans une seule et même notion par la découverte bouleversante de Hess, de Steenbock et leurs collaborateurs, qui montrèrent qu'on pouvait guérir le rachitisme expérimental sans irradier les animaux, mais en irradiant simplement les aliments de régime rachitogène. Rosenheim et Webster montrèrent ultérieurement que l'irradiation confère cette propriété antirachitique précisément aux stérols de l'alimentation.

Actuellement, on admet que le rachitisme est l'aboutissement de causes multiples: allaitement artificiel, sevrage prématuré, troubles digestifs, manque d'air et de lumière, infections chroniques parmi lesquelles Marfou jouer un rôle primordial à la syphilis héréditaire.

Au contraire, Lezné et ses élèves n'attachent qu'une importance relative à la syphilis, à la tuberculose et aux infections de la première enfance. Pour eux, trois facteurs dominent l'étiologie du rachitisme: les troubles digestifs de la première enfance, les fautes de régime alimentaire, surtout l'abus ou l'usage trop précoce du pain et des farineux et l'absence de lumière.

Les travaux de Mellanby, MacCollum, Simmond, etc., sur le rachitisme expérimental sont venus confirmer et compléter les données cliniques. Mais c'est surtout la constatation des effets surprenants produits par les rayons ultra-violet qui est venue éclairer la pathogénie du rachitisme.

On remarqua en effet que l'application des rayons ultra-violet modifie profondément et rapidement les lésions osseuses et l'état général des rachitiques.

De plus, il a été démontré que l'irradiation ultra-violette confère à certains corps, aliments ou médicaments, des propriétés telles que leur ingestion produit les mêmes effets que les rayons eux-mêmes; mais parmi ces corps, seuls ceux qui renforcent des stérols sont susceptibles d'être sensibilisés par les rayons ultra-violet. Parmi ces stérols, il en est un particulièrement activable, c'est l'er-

gostérol, que l'on rencontre dans l'ergot de seigle, la levure de bière, et qui existe, naturellement activé, dans l'huile de foie de morue et de thon.

A la suite de ces découvertes, on a émis l'hypothèse suivante: il existe dans l'organisme un principe nécessaire à la formation du tissu osseux. C'est la vitamine D. Si cette vitamine fait défaut dans l'économie du sujet en croissance, le rachitisme se développe; or, la vitamine D, c'est la même chose que l'ergostérol irradié.

L'ergostérol existe naturellement dans le sang, dans la peau, dans les glandes; il est inactif, il n'a aucune propriété antirachitique, mais s'il est soumis à l'action de la lumière solaire ou des rayons ultra-violet, il se transforme en principe antirachitique, c'est-à-dire en vitamine D.

Marfan attribue à l'ergostérol actif existant dans l'organisme deux propriétés: la première, c'est son pouvoir calcifiant; la seconde, qui serait la plus importante, c'est le pouvoir de protéger la cellule cartilagineuse du jeune enfant contre l'action des infections et les intoxications. De plus, il suppose que les infections et les intoxications empêchent la production de l'ergostérol dans l'organisme du jeune enfant en favorisant son élimination ou sa destruction, ce qui leur permet de provoquer dans la moelle osseuse et le cartilage, les réactions qui aboutissent au rachitisme. La première de ces réactions, c'est celle de la moelle osseuse; autour des points d'ossification, surtout sous le périoste, il se produit une vascularisation anormale et une prolifération excessive de la moelle osseuse, de sorte que l'os se gonfle et sa substance fondamentale se résorbe. Puis la moelle devient fibroïde et les ostéoblastes, incapables d'élaborer de l'os vrai, ne produisent qu'un tissu pauvre en chaux, du tissu ostéoïde. A la période de réparation, la moelle rouge réapparaît: le tissu ostéoïde se transforme en un tissu compact, plus blanc et plus dur que l'os normal, avec persistance des déformations que les actions mécaniques, musculaires

et autres, ont imprimées au tissu osseux pendant les phases précédentes.

En plus de ces troubles osseux, il existe aussi dans le rachitisme des altérations hémolymphatiques consistant en congestion des ganglions lymphatiques et des organes adénoïdiens, suivie d'une sclérose plus ou moins accusée.

Le syndrome humoral. L'hypophosphatémie est à peu près constante dans le rachitisme. Elle porte essentiellement sur le phosphore inorganique. La phosphatémie peut s'abaisser jusqu'à la moitié du chiffre normal. Une augmentation du taux des phosphates est fréquente; elle constituerait pour certains le test sanguin le plus sensible à l'affection. Quant à la calcémie, elle est normale ou un peu basse. Elle n'est très abaissée que s'il existe une tétanie associée. Donc, le rachitisme est la conséquence d'un trouble du métabolisme phospho-calcique, associée avec l'avitaminose D, qui ne fait qu'accentuer le défaut d'absorption intestinale des éléments nécessaires à la bonne marche de l'ossification.

Le rachitisme se présente essentiellement comme une maladie de l'ossification: il ne survient que pendant la croissance, il atteint tout le système osseux, mais prédomine de façon manifeste sur les zones de prolifération osseuse: la jonction épiphyso-diaphysaire des os longs, les noyaux d'ossification des os courts, la zone sous-périostée des os plats. Comme résultat, on a des déformations du crâne, la noure rachitique du membre supérieur, le bourrelet sus-malléolaire, le "genu valgum" du membre inférieur, le chapelet costal qui est fait de nodosités siégeant à l'extrémité antérieure des côtes, à leur jonction avec le cartilage.

Retentissement du rachitisme sur les maxillaires

Le maxillaire supérieur est beaucoup plus touché que le maxillaire inférieur, probablement parce qu'il est plus vascularisé.

Pour Frey qui a étudié le rachitisme des maxillaires et des dents, ce sont les

rapports intimes du tissu spongieux du maxillaire supérieur et du tissu adénoïde des fosses nasales et du pharynx qui expliqueraient la fréquence des déformations rachitiques de ce maxillaire.

En effet, dans le tout jeune âge, quand la différenciation des organes hématopoïétiques n'est pas faite, le maxillaire supérieur, os éminemment aréolaire, spongieux, participe à tous les troubles de l'état général. Plus tard, quand la dentition et la mastication lui ont imposé des travées résistantes, il n'en est pas moins en étroite intimité avec le tissu adénoïde des fosses nasales et de toutes les masses amygdaliennes; il en subit les poussées congestives; il en subit aussi toutes les manifestations de sclérose par l'entrave apportée à la respiration nasale.

La respiration exclusivement buccale, du fait de l'apparition de végétations adénoïdes ou de glossoptose, amène la déformation de la voûte palatine qui se creuse en ogive du fait de l'action de la sangle musculaire péri-maxillaire.

La succion des doigts et surtout du pouce, peut aussi propulser quelquefois dans des proportions considérables, toute la région incisive; de même, le développement exagéré de la langue peut en quelque sorte étaler la voûte palatine, mais beaucoup plus rarement et dans des mesures beaucoup moins marquées que l'effet rachitique.

Le maxillaire inférieur est moins touché par le rachitisme, ce qui tient à son indépendance anatomique beaucoup plus grande. Il n'existe guère, sur cet os, que deux déformations, d'ailleurs rares, qui puissent être rapportées au rachitisme; elles sont liées l'une et l'autre aux influences exercées par les muscles sur un os malléable. La première, c'est l'ouverture exagérée de l'angle maxillaire connu sous le nom de l'obtusisme rachitique. Il s'agit d'enfants qui, en raison de leur respiration exclusivement buccale, tiennent en contracture, surtout pendant le sommeil, leurs muscles abaisseurs; ceux-ci tirent en bas la branche horizontale, tandis que la branche montante reste

fixée par la tonicité des élévateurs. La seconde, décrite par J. Février, est aussi une modification angulaire; c'est l'élargissement de l'os limité à cet angle. Elle est due au fait que le masséter étant prédominant sur le ptérygoidien interne, son action produit, au niveau des insertions inférieures, par suite de la malléabilité de l'os, une sorte de torsion. Il en résulte que le bord inférieur du maxillaire est dévié en dehors tandis que les molaires sont inclinées en dedans.

On a décrit également un prognathisme rachitique du maxillaire; comme le fait remarquer Frey, il s'agit en réalité de faux prognathisme: le maxillaire inférieur a des dimensions normales et il ne paraît plus grand que par suite de l'atrophie du maxillaire supérieur.

Retentissement du rachitisme sur les dents

A la suite de leurs expériences sur les animaux, MacCollum, Mme Melanby ont cru pouvoir affirmer que la carence en vitamine D occasionnerait des défauts de structure dentaire et favoriserait la carie. En réalité, cliniquement, rien ne permet de confirmer cette assertion. Ce que l'on observe dans le rachitisme, ce sont:

—des troubles dans l'éruption et la chute des dents temporaires. Il peut y avoir précocité de l'éruption, les premières dents apparaissant avant six mois; beaucoup plus souvent, l'éruption est au contraire retardée. Ce retard marche généralement de pair avec un retard transitoire de la croissance;

—des irrégularités dans l'ordre chronologique de l'éruption;

—des anomalies de position, de forme et de volume, le nanisme des dents de lait, surtout incisives latérales et canines. On a signalé, du reste exceptionnellement, la malformation inverse, c'est-à-dire le gigantisme des incisives centrales supérieures.

On observe assez souvent des érosions chez les enfants rachitiques, mais seulement chez ceux qui ont présenté des convulsions. Frey a fait remarquer que le rachitisme ne pouvait être un facteur d'é-

rosion, mais qu'en revanche la tétanie qui l'accompagne souvent présentait toutes les conditions nécessaires (hypocalcémie, hypophosphatémie, attaques brusques et limitées du poison convulsivant) pour produire de telles lésions. La présence de l'érosion peut être due aussi à l'existence d'une syphilis concomitante.

Bien que la vitamine D joue un rôle indéniable dans la calcification des os et des dents, il ne semble pas cliniquement que les dents des rachitiques soient plus sensibles à la carie.

Traitement

Les mesures de surveillance médicale et l'hygiène ont eu pour conséquence une dégression considérable du rachitisme. *Le traitement préventif.*

Durant la grossesse, la surveillance médicale, des conditions normales de vie, l'administration, si cela s'avère nécessaire, de phosphates calciques et de vitamine D assurent au fœtus la constitution d'une réserve calcique normale. Pour le nourrisson, la meilleure prévention du rachitisme est une alimentation bien équilibrée (environ 0,50 de calcium et 0,25 gr. de phosphore par jour).

Chez l'enfant plus âgé, l'hygiène générale, la vie au grand air, l'alimentation normale suffisent à prévenir le rachitisme; lorsque l'enfant se développe mal, lorsqu'il présente un retard de la marche ou de l'éruption des dents, il est conseillé de lui prescrire une thérapeutique antirachitique à doses modérées.

Le traitement curatif.

Celui-ci cherche à corriger les deux facteurs rachitigènes:

- a) le régime alimentaire doit être équilibré en calcium et phosphore; l'administration de phosphate de chaux apporte à l'organisme les matériaux nécessaires;
- b) la vitaminothérapie est d'une remarquable efficacité. L'irradiation par le soleil ou par les rayons ultraviolets permet déjà à l'organisme de synthétiser normalement la vitamine D; ce procédé est parfois suffisant pour guérir le rachitisme. Cependant, on obtient des résultats beaucoup plus rapides en administrant à l'enfant de la vitamine D.

Il faut cependant mettre en garde les

parents des petits malades contre la répétition des doses fortes et la prolongation inconsiderée du traitement par la vitamine D, car en cas de dosages trop élevés, il se produit des précipitations calciques ectopiques, des accidents d'hypervitaminose D.

LA VITAMINE K.

L'intérêt de l'étude des avitaminoses K est autant théorique que pratique. Du point de vue biologique, en effet, elles constituent le type des avitaminoses qui ne relèvent pas d'une carence alimentaire; du point de vue clinique, leur dépistage précoce conduit au traitement préventif et curatif de certaines hémorragies qui pourraient être d'une extrême gravité.

La vitamine K, ou vitamine de la coagulation, est indispensable à la synthèse de la prothrombine. L'avitaminose K représente donc l'une des conditions étiologiques du syndrome hémorragique. Il s'agit d'ailleurs d'une avitaminose bien différente des avitaminoses habituelles: la vitamine K n'est pratiquement pas fournie à l'organisme dans la ration alimentaire, mais par les fermentations bactériennes de l'intestin en présence nécessaire de la bile.

La vitamine K est stockée dans le foie. Elle est utilisée par cette glande pour la synthèse de la prothrombine. L'avitaminose K entraîne une hypoprothrombinémie et ainsi, une tendance aux hémorragies. Ce fait est d'une grande importance pour les connaissances du dentiste qui, pendant ou après une intervention orale, peut se trouver en présence d'une telle lésion.

CONCLUSION

Le problème des vitamines n'est pas

complètement résolu. Il est compliqué par le fait que:

- 1) une erreur de régime alimentaire ne consiste pas seulement dans la carence en une vitamine, mais aussi dans le déséquilibre de différents éléments nutritifs;
- 2) l'avitaminose ne répond pas toujours à un défaut d'apport mais parfois à un défaut d'absorption ou d'utilisation de la vitamine (vitamine K par exemple);
- 3) l'avitaminose peut être inapparente et ne s'accompagner d'aucune manifestation clinique.

Les avitaminoses représentent un des aspects de la pathologie de la nutrition. Leur diagnostic est facilité dans de nombreux cas par la possibilité d'obtenir un test biologique et, de toute manière, par l'efficacité remarquable de la vitaminothérapie. Toutefois, il faut se garder de considérer comme d'origine avitaminique tout symptôme qui régresse après l'administration d'une vitamine; de nombreuses vitamines possèdent en effet des propriétés pharmacodynamiques propres, qui peuvent être utilisées dans un but thérapeutique.

En dépit des progrès faits par l'expérimentation dans le domaine des carences vitaminiques, l'application des connaissances ainsi acquises à la thérapeutique des affections buccales reste encore, dans beaucoup de cas, très aléatoire.

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Le facteur psychique dans la médecine dentaire

par le Dr MED. HEINRICH MENG, professeur
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(suite et fin)

Le stomatologiste qui sait bien observer et qui a des connaissances psychologiques, a également son importance pour le diagnostic de la vie psychique de son patient. Dans son cabinet il rencontre assez souvent des symptômes en voie de formation dont les origines sont au dehors. Ici il peut saisir, de façon pronostique, les conséquences d'un faux développement et il pourra, après l'avoir discuté avec les parents et un psychologue, reconduire l'enfant vers un assainissement psychique.

Il pourra aussi parfois faire le nécessaire, pour que des malades qu'il soupçonne de souffrir d'une vraie maladie organique, jusqu'alors non remarquée ou considérée comme étant d'origine nerveuse (ou bien le contraire: névroses sans substratum organique) — soient soumis à un examen organique approfondi.

Voyons par exemple la surdi-mutité des enfants parfois remarquée par le stomatologiste, et qui lui rend le rapport avec le patient tellement difficile. Elle n'est pas nécessairement organique. Des auteurs comme Lang, Mayer, Gutmann, rapportent qu'elle peut être causée par les inhibitions psychiques, et ceci dans la première enfance. Hamburger rapporte:

"Je me souviens d'un garçonnet de 5 ans, chez lequel on avait diagnostiqué une vraie surdité, et qui pouvait être démasqué finalement par la simple méthode suivante, qui a plusieurs fois fait ses preuves depuis: Une boîte à musique qui ne jouait que quelques instants après avoir été remontée, fut mise en marche en présence de l'enfant apparemment sourd. Le petit patient ne montrait aucun intérêt ou étonnement. Quand on lui prit la main pour la poser sur le levier qui déclenche le mécanisme il la retirait aussitôt avec dégoût. Quand on se détournait de l'enfant, la boîte resta toujours sans être touchée. Seulement, quand tous les médecins eurent quitté la pièce et l'enfant resta seul, on put entendre, après quelque temps, la musique et à travers une petite fenêtre dans le mur, on put nettement observer

comment l'enfant mettait la boîte à musique en marche chaque fois que celle-ci s'était arrêtée. La capacité d'entendre étant ainsi constatée, l'enfant fut par la suite, et peu à peu, amené à parler. Mais il faut dire que c'était un vrai original avec des résistances et inhibitions intérieures très fortes."

On rapporte le cas de cet enfant aussi parce qu'il prouve qu'on peut, malgré le blocage psychique par l'inhibition, réussir à trouver un accès à condition qu'un bon observateur soit psychologiquement expérimenté.

Voici encore un autre rapport sur une observation, publié par Ludwig Mayer:

Hans P., 5 ans, le plus jeune de quatre enfants, montre depuis cinq semaines un comportement étrange avant de s'endormir l'après-midi. Tout d'un coup, il commence à se tourner brusquement et violemment dans son lit, respire avec effort, tout son corps palpitant. Dans cet état, qui s'empire vite, il est impossible de lui parler. On essayait de calmer l'excitation par des sédatifs, mais l'enfant rendait les médicaments. La mère, très nerveuse, se trouve dans un état permanent d'inquiétude intensive. Le père est un alcoolique récidivant, et, par conséquent, le ménage voit bien des conflits et discussions violentes auxquelles l'enfant est souvent obligé d'assister. Le grand-père souffre de crises d'asthme et la mère du petit Hans se sacrifie pour le soigner. — On a cru voir dans les crises du petit garçon les symptômes d'une sorte d'épilepsie, d'autant plus qu'il lui arrivait quelquefois d'uriner dans son lit. D'autre part, il était frappant que l'excitation ne se manifestait que quand il ne restait pas, avant de le coucher, assez de temps pour le peser ou pour lui parler. Depuis que les crises ont commencé, la mère s'occupe d'une façon exagérément craintive et trop longtemps de l'enfant qui montre d'ailleurs toute une série de symptômes nerveux, comme pavor nocturnus, sanglots subits, changements rapides d'humeur, etc. A part cela l'enfant est, en général, physiquement et intellectuellement bien développé.

D'après la description de la mère, il s'agirait ici d'une réaction d'entêtement, parce qu'on oblige le petit à se coucher encore dans l'après-midi tandis qu'on permet à ses frères d'aller jouer. Il refuse de se laisser coucher et, après, il veut sa mère toute à lui. Au début, il commençait par des mouvements de balançoire qu'on a d'ailleurs (et très justement) diagnostiqués comme

état des manifestations d'excitation sexuelle. Lorsqu'il avait constaté la réaction particulièrement nerveuse et craintive de sa mère, il continuait la manoeuvre et intensifiait ainsi son excitation tout en atteignant son but: la mère ne bougea plus de son lit jusqu'à ce qu'il fût endormi.

Maintenant, il est strictement défendu à la mère et aux autres parents de faire la moindre attention aux manoeuvres du gamin, même quand il commence à crier. En plus de ça, on lui déclare qu'il devra, après s'être réveillé, encore rester couché pendant quelque temps et qu'il n'aura pas la permission d'aller jouer, s'il a recommencé à se balancer et si de nouveau il s'est montré excité. — Les effets favorables de ces mesures pédagogiques ne se firent pas attendre et, après quelques jours seulement, tous les symptômes avaient disparu.

Donc il n'y a pas lieu de minimiser l'importance du fait que des conflits psychiques de la première enfance peuvent avoir une influence profonde sur caractère et maladies. Glanzmann, le pédiatre bernois, disait dans une conférence avec discussion (*"Solutions inusitées de conflits psychiques"*): "Les conflits psychiques peuvent devenir gênants même pour le cerveau enfantin à point tel qu'il réagit par des crises épileptiformes. Changement du milieu et éloignement de l'entourage qui cause le conflit suffisent par la suite à faire disparaître les crises pour quelque temps. Nous avons observé un garçonnet assez sensible, qui réagissait par des crises épileptiformes sur la peine psychique que sa mère devait lui faire en le grondant. Ce qui laissait soupçonner le déclenchement psychogène, étaient les cris violents et continuels avant et pendant la crise. D'autre part il était frappant de voir les effets favorables du changement de milieu. Mais cette thérapie ne suffit pas à tous les coups. Assez souvent il est nécessaire de rééduquer l'enfant ainsi que les parents.

Problèmes des prothèses dentaires

Encore quelques mots sur le problème des prothèses dentaires. Pour la question, si elle est supportable ainsi que pour celle de ses influences positives et négatives sur les complexes d'infériorité, l'attitude psychique du stomatologiste (en plus de la solution purement chirurgicale et tech-

nique), son rapport avec le malade et surtout sa connaissance de tout ce qui concerne sa vie antérieure à l'opération, seront d'une importance qu'il ne faut pas sous-estimer. En général, les mêmes conditions valent pour la genèse des complexes d'infériorité chez les porteurs de prothèses dentaires (ou des défectuosités de la mâchoire), que pour des individus avec des défectuosités naturelles ou innées. On a procédé à un examen spécial de 30 personnes adultes avec des lésions graves, subies avant leur septième année. Pendant les examens, on pouvait nettement constater à quel point la structure de l'entourage, surtout de la famille, influence le développement du caractère de quelqu'un qui a subi la lésion dans sa première enfance. Une analogie dans le comportement de porteurs de prothèses: La prothèse remplace l'organe ou elle cache la défectuosité. (Exemple: Oeil artificiel des borgnes).

Il s'agit de préparer d'une façon appropriée le futur porteur de la prothèse à la nouvelle situation, et puis aussi de l'aider plus tard, quand il aura, malgré le bon travail technique du stomatologiste, des difficultés à s'adapter psychiquement à son "deuil" normal ou pathologique, causé par sa défectuosité.

Ici il importe que le stomatologiste fasse une sorte de charge d'âmes profane, d'ailleurs une tâche qui incombe à nous tous qui travaillons non seulement avec le bistouri et d'autres matières mortes, mais avec des êtres humains vivants.

Les relations entre stomatologiste et patient

Encore un mot sur la question spéciale concernant les rapports psychiques entre le stomatologiste et son patient. Depuis Freud, nous savons ce qu'est le transfert d'impressions vécues (soit positives, soit négatives) provenant de rapports avec l'entourage de la première enfance, sur un rapport humain actuel. C'est ainsi que le patient, dans son rapport psychique avec le stomatologiste, peut revivre des relations psychiques d'antan, qui le liaient à des personnages (surtout ses parents) qui

représentaient pour lui les autorités de son entourage de cette époque lointaine. Ces rapports psychiques étaient en partie positifs, en partie négatifs. Ce mélange composé d'affection et d'antipathie (ambivalence) a des effets, dont le caractère fâcheux varie selon le degré auquel l'individu est névrosé. Il faut que le stomatologiste tienne compte de ce fait, surtout pendant les phases particulièrement douloureuses du traitement, où le patient, se sentant abandonné et à la merci du médecin, est plus enclin que jamais aux phénomènes de "transfert." D'anciennes angoisses sont ressuscitées. Le "complexe d'endommagement" ou "complexe de castration" se manifeste le plus souvent pendant des opérations dentaires, sans que le malade s'en rende compte. Ceci est prouvé par des analyses exactes de rêves, observations de psychoses et par l'histoire de l'interprétation symbolique des organes du corps humain. On constatait souvent des cas d'enfants ou d'individus jeunes, où des réactions d'obstination, non fondées dans le conscient, mais motivées dans l'inconscient, furent

activées contre la personne du stomatologiste. Tout dépend comment le stomatologiste est "rangé" en tant que personnalité, combien d'esprit naturel, de sens commun il possède et ce qu'il sait de la nature humaine, surtout de celle du névrosé, afin de pouvoir choisir la meilleure méthode pour traiter ses patients, petits et adultes, donc pour les guider médicalement et humainement. La connaissance des faits, dont nous venons de parler, lui permettra de voir "le fond du sac" dans bien des déclarations d'amour, et de venir à bout de bien des chagrins, ingratitude et déceptions.

L'homme n'est pas précisément "bon" ou "mauvais" (plutôt mauvais), mais un mélange des deux. Tout dépend comment on arrive à mettre à son profit dans la thérapie ces deux côtés de l'âme humaine. Ainsi nos pulsions ne sont ni "bonnes" ni "mauvaises" mais c'est notre MOI et notre conscience qui les dirigent vers le bon ou le mauvais côté. Et ceci vaut pour tous les êtres humains dans l'importe quelle phase de leur vie.

Psyché, juin 1953

Heinrich Meng

Nouvelles de l'Association

Le plan de la Croix-Bleue peut se compléter des bénéfices médicaux et chirurgicaux

La Croix-Bleue vient d'annoncer que les souscripteurs peuvent augmenter leur protection en y ajoutant les bénéfices médicaux et chirurgicaux. Les dentistes du Québec, de l'Ontario et des quatre provinces maritimes peuvent se prévaloir de cette offre. On n'a pas encore conclu d'arrangements avec les autres provinces.

Les bénéfices et les taux sont les suivants:

Ontario:

- jusqu'à \$300.00 d'honoraires de chirurgie
- jusqu'à 51 jours de soins médicaux à l'hôpital à raison de \$3.00, par jour.
- Taux: \$35.40, par année, pour une famille.
- \$11.40, par année, pour une personne.

Québec:

- jusqu'à \$200.00 d'honoraires de chirurgie
- jusqu'à 21 jours de soins médicaux, à l'hôpital, à raison de \$3.00, par jour.
- Taux: \$42.00, par année, pour une famille
- \$11.40, par année pour une personne.

Provinces maritimes:

- jusqu'à \$300.00 d'honoraires de chirurgie
- jusqu'à 31 jours de soins médicaux à l'hôpital à raison de \$3.00, par jour.
- Taux: \$36.00, par année, pour une famille
- \$13.40, par année, pour une personne.

Les dentistes des provinces sus-mentionnées recevront bientôt une circulaire à ce sujet. Toute demande de renseignements doit être adressée au Plan d'Assurance-Pension de l'A.D.C., casier postal 70, Brockville, Ont.

Notes sur la fluoruration

Fredericton—Le conseil municipal a approuvé la fluoruration, le 8 mars.

Prince George, C.B.—On a commandé l'appareillage pour fluorurer l'eau et cette ville sera probablement la première de la Colombie britannique à fluorurer son eau.

Windsor—Le conseil municipal adopte la fluoruration et vote l'argent nécessaire à acheter l'appareillage à cette fin, en attendant une déclaration de l'Honorable Frost au sujet du rapport de l'Université de Toronto.

Renfrew, Ontario—Le conseil de ville a approuvé la fluoruration le 22 mars dernier.

Michipicoton, Ontario—Le conseil municipal adopte à l'unanimité le rapport du Bureau de Santé recommandant la fluoruration de l'eau de l'aqueduc.

Chicago—Le conseil municipal approuve

la fluoruration; celle-ci commencera en octobre 1955.

Banlieue de Toronto—Une banlieue de Toronto a commencé à fluorurer l'eau en avril.

Les appareillages dentaires deviennent francs de port

Le budget fédéral soumis le 5 avril 1955 contient une clause qui rend les fauteuils, les unités, les moteurs dentaires et leurs parties francs de port. Cette décision devrait abaisser le prix de revient de l'appareillage dentaire et aussi favoriser les nouveaux diplômés dans l'achat de leur installation et les anciens praticiens dans le remplacement de leur équipement. L'Association dentaire canadienne recommandait cette mesure depuis plusieurs années.

Réunions de la Fédération dentaire internationale à Copenhague et à Athènes

La 43e réunion annuelle de la Fédération dentaire internationale aura lieu, cet été, à Copenhague, Danemark, du 14 au 20 août. La Fédération tiendra, de plus, une réunion spéciale à Athènes du 25 au 30 septembre, en collaboration avec le Deuxième Congrès Panhellenique. A Copenhague, le programme se déroulera dans l'édifice du Parlement danois, le Collège Royal Dentaire et à l'Institut d'Anatomie de l'Université de Copenhague. On consacrera une journée à une randonnée dans la région de la Mer du Nord et à des visites à des endroits historiques, tels que le château d'Elsinore. Le congrès d'Athènes sera précédé et suivi de croisières de neuf jours entre Venise et la

Grèce. Les principaux thèmes du congrès d'Athènes seront la dentisterie sociale, la pédodontie, la périodontie et l'endodontie.

Acquisitions récentes de la bibliothèque

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 ORBAN, B. J., and WENTZ, F. M.: Atlas of clinical pathology of the oral mucous membrane. 1955. 135p. illus.
 ROBINSON, F. A.: Antibiotics. 1953. 132p.
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XVIème Congrès Français de Stomatologie

Le XVIème Congrès Français de Stomatologie aura lieu à Paris du 3 au 9 Octobre 1955, sous la Présidence du Docteur André Lattès, stomatologiste de l'Hôpital Laennec.

Son Secrétariat est assuré par le Docteur Robert Vrasse, Stomatologiste des Hôpitaux, 2, rue de Miromesnil à Paris (VIII^e), à qui doivent être adressés les titres des communications et la correspondance.

Le Droit d'Inscription d'une valeur de six mille francs français (Fr.F. 6,000) est payable à la Banque du Congrèsiste en monnaie de son pays au compte de la S.O.C.F.I., 11er rue Chanez Paris (XVI^e) Congrès de Stomatologie.

L'organisation du voyage et du séjour à Paris des Congressistes (transports aériens, maritimes, ferroviaires, wagons-lits, réduction sur les tarifs des chemins de fer français, chambres d'hôtel, théâtres, etc.) est confiée à la Société d'Organisation des Congrès Français et Internationaux (S.O.C.F.I.) 11er rue Chanez à Paris (XVI^e) (téléphone: JASmin 06-90, Poste 527), qui se chargera, sur demande, des formalités et démarches nécessaires.

Deux rapports seront présentés:

- Technique et indications du traitement chirurgical des fractures du maxillaire inférieur (sans perte de substance) par MM. Grellet, Chemin, Cadenat.
- La douleur en stomatologie, par MM. R. Bataille, Descrozailles et A. Mugnier.

Deux questions seront mises en discussion:

- La prothèse adjointe squelettée. Sa valeur esthétique, fonctionnelle et prophylactique, par MM. Bouroux, G. Ovazza et Cl. Schuhmann.
- Possibilités et limites actuelles des différentes thérapeutiques orthodontiques, par MM. J. Cauhépe, Fieux et Coutant.

Le Secrétaire Général: Dr Robert VRASSE,
 Stomatologiste des Hôpitaux, 2, rue de Miromesnil—Paris (8^e)
 Tél. ANjou 38-70

Journal

OF THE CANADIAN DENTAL ASSOCIATION

Twenty-five years of dental surgery*

Twenty-four (24) Practical Observations based on
Twenty-five Years of Dental Surgery
Pre-Operative Observations—
Pre-Operative Precautions

by GEORGE A. MORGAN, D.D.S., Toronto,
Ontario.

1. Observe your patient's general condition.

A. Skin colour — pale faces are generally suggestive of anaemias: flushed or red faces suggestive of hypertension, hence an increase in operative haemorrhage.

B. Shape of face — square faces have end to end bites, shorter, heavier root structure, heavier, denser bone. Elongated faces have longer, more fragile root formation, less dense overlying bone. Round faces are considered normals.

C. Temperament — does the patient walk in or crawl in? Is the patient calm, nervous, irritated or lethargic?

D. Age of Patient — bone structure in children and young adults is more pliable than that of middle or older aged patients.

E. A thermometer is an essential part of any diagnostic procedure. Operative precaution should be used in patients who show an elevation in temperature.

2. Adequate X-rays.

Sufficient x-rays should be taken to cover the operative field. They should be viewed under magnification. They should be taken at proper angulation well processed and suitably mounted.

In examining x-rays, a basic knowledge of dental anatomy, histology and pathology is essential.

When the operative problem concerns one of anatomical structure, an x-ray of the opposite side should be taken to determine the deviation from normal.

3. Maxillary Antra.

It should be remembered that 5% of the maxillary antra extend as far forward as the laterals. While it would appear that the root structure of many

*Presented at the Combined Meeting—Canadian Dental Association and Ontario Dental Association—May 1955, Toronto, Ontario.

posterior, maxillary teeth penetrate the maxillary sinus, this is rarely the case, the maxillary antrum generally dipping down in between the buccal and lingual roots.

4. *Retained Roots.*

It should be remembered that retained roots that in the x-ray appear to be clearly visualized, lie close to the film, are on the lingual or palatal aspect and therefore look easy but are difficult to remove. Retained roots that are not clearly visualized in the x-ray, lie farther away from the film, are generally on the buccal aspect, look difficult but are easy to remove via the buccal approach.

5. *Evaluation of Tissue Thickness.*

This observation is an important factor in the surgery performed for the removal of fibrous maxillary heels and other soft tissue growths. It is primarily important and frequently is the determining factor in the size and shape of the surgical flap necessary for the removal of retained roots.

6. *Observe Your Surgical Field Clinically.*

This includes the palpation of bone overlying the tooth or teeth to be extracted, colour of surrounding mucous membrane and the rotation and position of teeth in the arch, in relation to normal. Heavier bone can be expected to be found overlying the root in the same direction as the rotation. For example, a mesially rotated, maxillary, right first molar will have increased bone structure over the mesially rotated root.

7. *Oral Lesions.*

Oral lesions that are smoothed surfaced are likely not malignant. Lesions that are rough, pebbly or ulcerated in appearance are likely malignant. Bone growths or proliferations are generally negative. Bone destructions may be malignant. Unusual appearing pathological lesions should be biopsied.

8. *Enquiry re Previous Surgery.*

Ask patient about previous difficulties, haemorrhage, post-operative complica-

tions, for if previous dental surgery resulted in post-operative trouble, you will likely have trouble too.

9. *Impacted Teeth.*

In dealing with impacted teeth, it is important to remember that they constitute a difficult problem if the root structure is not fully formed as in the case of teen-aged children.

It should also be remembered that impacted teeth in adults who are past middle age, constitute a difficult problem in most cases due to the pressure atrophy of the periodontal membrane and the sack surrounding the crown of the tooth.

10. *Hypertension of Coronary Patients.*

In cases of hypertension and coronary complications, it is well to remember that the adrenalin put out by the patient, in anxiety, fear and pain, is more important than the adrenalin injected by the dentist. The evaluation of the surgical risk in patients with diabetes or any one of the various blood dyscrasias should be in co-operation with the patient's physician.

Determine from parents of the child patient, general health conditions.

11. *Pre-Medication.*

It is thought beneficial to pre-medicate in all difficult cases and in all multiple extractions. Some form of barbiturate — nenbutal, seconal, pentanica. For relief of immediate post-operative pain—veganin, atidol, demerol. Dosage to conform with the surgical operative, systemic condition, and age of patient.

12. *Evaluation of Foci.*

A careful evaluation of the risk involved in the removal of foci is necessary. Certainly one does not seem warranted in removing foci merely suspected of being the seat of infection. It is much easier and safer to arrive at a decision to remove teeth hopelessly involved than it is to decide to sacrifice non-vital teeth that are useful teeth and are found to be normal on Roentgenological examination.

13. Operative Procedures.

Successful operative procedures are primarily based on thorough technique of sterilization of dental instruments, sponges and all other operative equipment. The autoclave method of sterilization is the most positive and due to recent improvements in technique, it is now the safest and the fastest.

14. Needles and Incisions.

It is suggested that separate needles should be used for each injection, and different knives and chisels for each infected area.

Razor sharp instruments and clean-cut incisions make for rapid healing, post-operative wounds.

Initial surgery — Initial dental surgery should be confined to half of either the maxilla or mandible. If this procedure is adhered to, surgical tolerance of the patient can be determined.

15. Removal of Anterior Teeth.

It is well to remember, that in general, single rooted teeth, except the laterals, are rotated, multi-rooted teeth and luxated. Cuspid s should be rotated mesially, towards the mid-line. This rotation brings the distal curvature of the cuspid root towards the thin, buccal layer of bone and root-tip fractures are avoided. If the six anteriors are to be removed at one sitting, it is advisable to remove the cuspid first. This procedure will give you some bone support from the lateral and fracture of buccal bone overlying the cuspid will frequently be avoided.

16. Surgical Flaps.

Conditions which involve bone pathology, impacted teeth, mal-formed, retained or hyper-cementosed roots, require surgical flaps. Surgical flaps when made, should be generous in size, to give good blood supply, provide adequate vision of the surgical field and be replaced on a good-sized bone shoulder. Surgical flaps should not be made over the cuspid region, since the tissue in the area is thin. For example, if a first bicuspid root is

to be removed, a flap should be made distally over the second bicuspid.

17. Impacted Teeth.

Impactions in persons past forty are frequently difficult and fraught with the possibility of jaw fracture due to the erosion of the periodontal membrane and the fusion of the impacted tooth with surrounding, brittle, dense bone.

Generally the maxillary third molar is easier to remove than the mandibular third molar. Removal of the second molar in teen-age children will allow the adjacent third molar to erupt normally in the maxilla but this is not true of the mandibular second molar. The mandibular, impacted third molar in children, fourteen to seventeen years of age, is most difficult of removal due to the absence of the calcified root structure stabilizing the crown.

The vertically impacted, mandibular third molar is much more difficult to remove than the angular impaction.

18. Cysts.

Cysts of the mandible, while they appear large, are not as a rule comparable to a similar appearing size cyst in the maxilla. This is due to the comparatively thin buccal-labial, lingual width of the mandible.

If the cyst is removed first and the teeth involved in the cyst second, many functionally useful teeth will be preserved.

The complete enucleation of the cystic wall and its contents allowing the bone cavity to fill in with a normal blood clot, seems to be the best method of treatment. Large cystic cavities may be filled with some form of dissolvable cellulose such as Gelfoam.

19. Differential Diagnosis.

In the anterior maxilla, differential diagnosis between a maxillary, median-line cyst and one of tooth origin, is necessary. Probably the best aid in roentgenological differential diagnosis is to observe the condition in an occlusal ray, not de-

pending entirely on the customary intra-oral dental ray of the maxillary, central incisors. Median-line cysts will generally be observed to be spherical and divided by the median-line suture. This will be found to be in direct contrast to cysts or infected areas about centrals or laterals which have a tendency to be observed on either one side or the other of the nasal spine. Frequently one is able to trace in the dental rays of the anterior region, the intact periodontal membrane around the anterior teeth, thus eliminating the suspected teeth as the aetiological factor in the median-line cyst.

20. *Post-Operative Care—*

Routine Treatment.

It is suggested that following dental surgery, a gauze pack should be placed over the operative wound and left in place until the patient arrives home. This procedure avoids irritation of the area and allows sufficient time for organization of the blood clot.

Where surgery has been difficult or extensive, cold applications should be applied to the operative area for a period of one to three hours immediately after the operation.

Sufficient post-operative medication should be given to control pain and assure adequate rest.

The patient should be advised not to rinse the mouth until the following morning, since rinsing may dislodge the blood clot and interrupt the normal process of healing.

The patient should be advised that some oozing of the operative wound is to be expected. If there is active bleeding, a clean pad of gauze may be placed over the wound and mouth closed to cause pressure.

Some degree of swelling can be expected the second day after extraction. Warm external applications will do much to reduce the swelling.

21. *Post-Operative Pain.*

In control of second and third day post-operative pain, it is essential to deter-

mine the cause of the disturbance. It may be due to the presence of spicules with or without hypertrophied tissue; it may be the result of trauma; it may be pain in a normal wound, or in the so-called dry-socket in which normal blood clot has been disturbed.

Patients should be seen on the third post-operative day. If a dry-socket is going to develop, the blood clot will be a dark liver colour with a characteristic odour. Remnants of the unorganized blood clot should be removed and a course of treatment should be started immediately. The principle of dry-socket treatment is to protect the nerve endings at the bottom of the socket by some means of packing, thus keeping the patient free from pain.

22. *Dry-Sockets.*

Many dry-sockets can be spotted from pre-operative x-rays. They occur most frequently around devitalized teeth of long standing, and are more common in the posterior part of the mandible. Many dry-sockets may be aborted by removing the hard, boney, inter-proximal septum. This leaves only one blood clot to organize in the socket. If a dry-socket does develop, there is only one, easy of access, socket to dress.

23. *Haemorrhage.*

Extensive post-operative haemorrhage is controlled by re-injecting the operative area, removing the remnants of the old blood clot and packing the socket with some form of dissolvable cellulose packing — suturing the operative wound and the use of pressure. Home treatment should include rest with the head in an elevated position, cold external applications and a course of vitamin "K" tablets, (Kavitan 5 mgms.), plus ascorbic acid tablets, (250 mgms.).

24. *Post-Operative Swelling.*

The persistent swelling following extraction that becomes hard and extends below the border of the jaw is spoken of as cellulitis. There is usually elevation

of temperature and the patient is more or less toxic due to lack of drainage. Treatment in these cases, consists of roentgen rays of the area, to determine if there is any destruction of bone. Special attention should be given to elimination and the forcing of fluids. Constant hot compresses and mouth washes are important to speed up localization. Once the condition is localized, good drainage should be established. Occasionally, it is possible to obtain drainage through the operative wound,

but ordinarily that drainage is not sufficient.

Treatment should be aided by the intelligent use of a suitable patient-tolerant anti-biotic and if case involves a systemic problem one should not hesitate to enlist the help or services of the patient's physician.

Post-operative gagging can generally be controlled by the administration of 50 to 100 mgms. of Banadryl. This may be especially helpful in immediate denture insertions.

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The application of fantasy to paedodontics

by GORDON M. JINKS, Vancouver, B.C.

Every normal person experiences the pleasure of fantasy as is evidenced by day-dreaming. Suppose one were to win an expense-paid, month-long holiday at any resort of choice in the world, and the prize included the cost of a baby sitter and the cost of office expenses as well. What a time one would have! This type of thinking happens to be beneficial, for fantasy perception is a "buffer system" active in normal individuals which enables them to "better tolerate the frustrating aspects of real life".⁽¹⁾ For example, a sailor at sea will pin pictures of his girl friend near his bunk or a young married couple will spend hours studying plans of houses which are far above their means.

To the child, fantasy is even more important than it is to the adult, for he meets frustration face to face with every

movement of his body and every sound he utters. Happily, however, Mother Nature has provided this "safety valve",⁽²⁾ this wonderful ability to dream up an explanation for any baffling situation. Frustration, then, triggers fantasy into action and whenever an unexplainable situation arises, such as a first visit to a dental office, the child is motivated to imagine things. These thoughts may be good or bad, depending firstly, on his ability to invent. This last feature is of prime importance to children's dentistry and will be discussed later with the technique of pleasurable fantasy production.

Jurgen Ruesch, in describing fantasy, says, "In his mind, an individual can delay or speed up events, he can bridge distances; he can add, subtract, maximize or minimize certain features."

Saul Rosenwig describes fantasy as having five characteristics.

1. It is infantile in origin. That is, it is

similar to the type of thinking of small children to whom time means nothing.⁽⁴⁾ It is interesting to note that small children believe they were always on earth.⁽⁵⁾ The application of this feature to dentistry lies in the fact that children enjoy (perhaps secretly) pretending that they are babies again, especially when an unpleasant situation arises.⁽⁶⁾ Many children in the writer's practice have asked for little fillings because they were little people. Therefore, any attempt by the adult to bring children back to a younger mental age is viewed as a sign of understanding. However, with some children, this procedure is a source of humour, for, if a dentist were to tell a child of eight or nine that he had a bottle of fairies, the child would laugh and say "Oh yeah! There aren't such things".

2. Fantasy is irrational and has complete disregard for logic and reason. Children believe in magic. They believe that Santa Claus can come down a chimney and do not even question the fact that the hole may be too small or that he would get dirty or even burned. He just comes down and that is the end of it. Many children in the dental office are problems solely because some older person has described dental procedures as being carried on with drills, picks and hammers. The small child, not having the ability to rationalize, takes these things literally and even magnifies them. The writer recalls one child who was a perfect patient for "fillings" but went into hysterics over the proposed extraction. Apparently, someone had told him that the roots of his teeth were attached to his eyes and he imagined that the extraction would make him blind.

3. Fantasy has an affinity for concrete pictures. The child has the ability to actually see the imagined situation in his mind's eye.

4. It is inhibited by education. One of the chief functions of education is to bring the child over from a world of fantasy into a world of realism. If this is done too soon, that is, if a child is made

to face the facts before he can properly assimilate them, incorrect suppressed fantasies will result as in the foregoing case of the boy who related extractions to blindness. This type of indrawn child is not uncommon in a dental office and is very difficult to manage.

5. Fantasy has durability. "An individual may unwittingly translate into reality fantasies which have been rejected by and carefully hidden from consciousness." This accounts for impulses and superstitions which show up in the personality of adults. It also accounts for the fear of dentistry that some adults still retain and unwittingly pass on to their children.

What happens in the mind of a child on his first visit to a dental office? Assuming that he has had no past dental experience of any kind, he sizes up the contents of the waiting room. Is it full of grown up people or are there other children there? Are there children's toys around or are there just magazines? (he can't read). Is his mother relaxed or does she appear anxious? Here the fantasy of parent-child relationship will come into play. Fear of treatment has been found in some cases⁽⁷⁾ to go even deeper than the fear of dentistry and involves the unconscious fear of death, usually where severe illness has been experienced in the past, by either the child or the parent.

Should the parent exert no influence on the child (which is more often the case), fantasy is then produced by the surrounding objects and can be stimulated in the direction that we as adults want it to go. There is no "sharp dividing line between fantasy and reality"⁽⁸⁾ and the two can be combined so that the child does not know where the game ends and reality begins.

To accomplish the desired result the dentist has two tools with which to work:

1. Waiting room contents (Fig. 1)
2. Communication of ideas.
 - (a) by actions
 - (b) by talking

The waiting room, of course, lends itself

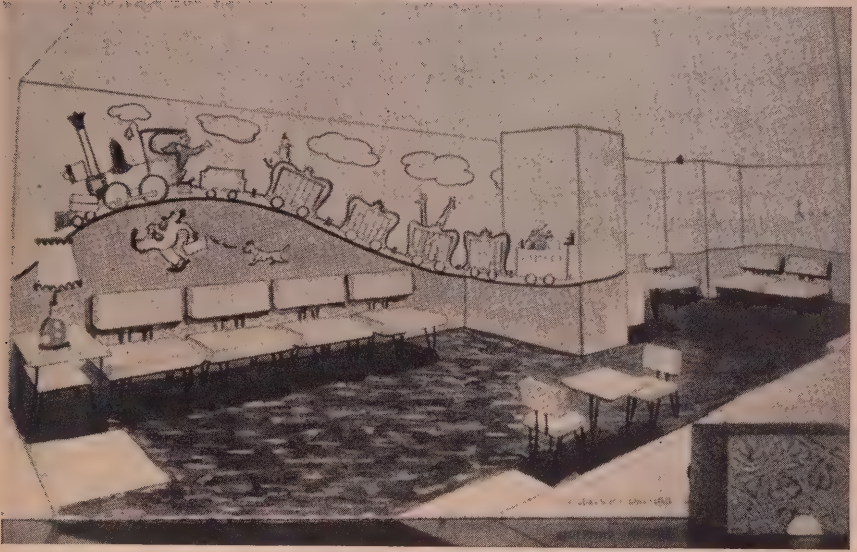


FIG. 1. *The Reception Room.*

well to a proper introduction and such items as child-size chairs and tables, children's pictures, magazines, toys and tropical fish help to produce pleasant fantasy images for the child to play with. These furnishings also provide the mother and the dentist with topics of conversation familiar to the child. Much time could be spent on waiting room treatment but since this phase is of secondary importance the balance of this paper will deal with the technique of fantasy production by actions and talking.

Other professions such as psychiatry, psychology, teaching and entertainment make use of fantasy. For instance psychiatrists and psychologists make use of many tests,^(8,9,10) one of which is the famous Rorschach Ink Blot Test. These tests are all designed to stimulate fantasy, which when expressed, give the therapist an insight into the patient's problem. Child psychologists learn about the problems confronting children by directing and studying their habits of play;⁽¹¹⁾ les-

sons are taught in school by means of fairytale analogies; and actors make the stimulation of fantasy their business.

In trying to produce fantasy in the dental office the dentist like the actor has props (the waiting room) and actors (himself and the nurse) who must play their parts to perfection in order to produce the correct results. Hesitation or lack of confidence on the part of either one will immediately destroy the picture. No matter how perfectly the actor delivers his lines, the plot becomes meaningless without the appropriate gesticulations and facial expressions, so with the dentist he must use his hands, his eyes and his head when talking to small children. These little people constitute a very critical audience who will attempt to leave in the middle of the play if it does not suit them. Unlike the actor, however, the dentist can forcibly detain his audience.

It is interesting to note that "Language is the basic tool by which communication

takes place between individuals". James M. Cunningham,¹² the author of this quotation, also points out that language is used for the following purposes:

1. to educate
2. to secure co-operation
3. to entertain
4. to produce magic
5. to ease the tension arising out of silence.

All five of the above have been used in dental offices at one time or another but some purposes are more difficult to achieve than others. For instance, it is much easier to entertain a child than it is to educate him. The first two of the above are the hardest to accomplish because children under the age of seven^{(13) p. 126} are not mature enough to be either educated or co-operative unless approached properly. The last three, then, can be very useful in achieving the first two. For example, easing the tension arising out of silence by asking questions, talking of things in the waiting room or discussing the clothes the child is wearing will give the dentist the opportunity to entertain the child by giving him a ride in the chair and eventually showing him the wonders of dental magic.

The term dental magic needs some clarification at this point. Piaget^{(13) p. 145} has pointed out that all children have "a need for justification at all costs." In other words, all events influencing the life of a child must have an explanation of some kind whether the reason why be true or not. It is up to the dentist to make sure that the child puts the desired interpretation on the facts. A child on first entering the operating room does so with apprehension because of the many strange objects found therein. His first reaction is to take one look and leave for home. Here the operator must step in and relate the uncommon objects to more common ones. For instance, a remark like "how do you like my gas station" made in reference to the unit will create interest in the equipment. There are, unfortunately,

other things which are more difficult to explain such as the sound of the so-called "drill" and the "feeling of freezing". The only explanation acceptable for these phenomena is magic. All pre-school children believe in magic, older children enjoy hearing about it and teen-agers chuckle to themselves in response to a remark such as "If you were four years old I would pretend this was . . ."

Closely related to magic are fairies who play a dominant role in the lives of most children. They help Santa Claus, they resemble angels and they bring money for a tooth which is left under a pillow. In dentistry it has been found that fairies can also play an important part. For instance, the feeling that is produced by anaesthetic often terrifies children. It is a completely foreign feeling which must be justified. For years the writer tried to explain that the mouth had been put to sleep. This was not enough, however, because the children still complained bitterly that they had been hurt. (It should be pointed out that these children were not referring to the needle insertion). When the story was changed to "I am going to put fairies into your mouth to help us fix your teeth", the whole attitude of the children changed. This explanation also served to prevent children from biting their lips afterward by simply adding at the end of the appointment "Don't bite the fairies or they will not like it."

There are many other word pictures that can be painted for the children some of these being the analogies drawn between dental instruments and familiar objects. Examples are:

mouth mirror	dollie's mirror
hand instruments ..	tools
cotton pellets	bunny rabbit's tails
hand piece	vacuum cleaner
saliva ejector	drinking machine
automatic mallet ...	sewing machine
the filling	a patch
celluloid or plastic strips	scotch tape
rubber dam	blanket for sleeping tooth
clamp	clothes peg
air	wind

cuspidor	sink
Wig-L-Bug	mix master
mouth prop	chair for teeth
waiting room	living room
operating room	kitchen

Having a quick prepared answer for any new instrument satisfies the need for justification and the resultant production of fantasy reduces the physical symptoms common to frustration such as crying and moving.⁽¹⁴⁾

The making of comparisons for children is sometimes very difficult because their past experiences and their desires are so limited. As has been pointed out, one can use words to make comparisons of familiar with unfamiliar things such as a dirty mouth being like a garbage can but often this is impossible. For instance to tell a child that sucking the thumb will make their teeth "stick out" is useless. In the first place, there are very few people these days who have teeth that literally "stick out" and in the second place it sets a bad example to call attention to someone else's deformity. A very dramatic and often humorous example can be presented to children in the form of "pretend" teeth (Fig. 2) which fit over the operator's own anteriors thereby giving him the appearance of a person with protruding teeth.

The foregoing has been a discussion of one of the many facets of the child mind. All the principles discussed have been put into actual practice with very gratifying results. This paper has dealt strictly with the production of pleasant fantasies and has not gone into the unpleasant fantasies which as a matter of interest may result in such symptoms as hysterical deafness,⁽¹⁵⁾ bronchial asthma, urticaria, exzema, gastro-intestinal disturbances and hay-fever.⁽¹⁶⁾ If this study of fantasy in children does nothing else it will help the dentist to better understand and perhaps influence his personal feelings about children.



FIG. 2. "Pretend Teeth"

Footnote: Credit for most of the ideas in this paper must go to the children themselves, but thanks must also be given to my colleagues at the University of Washington and those in the Vancouver Paedodontic Study Club. Pictures courtesy of Dr. Harold W. Helm.

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3195 Granville St.,
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Removal of an unerupted molar tooth

A CASE REPORT

by A. A. ANTONI, D.D.S., M.Sc.D.*

This case is presented to show that sometimes the removal of a tooth can be simplified by using an extra-oral approach. It is felt that if an intra-oral approach had been used, injury to the mandibular nerve and severe weakening of the jaw itself, could have been possible. (See Figs: 1-4.)

The patient, a well-nourished, well-developed, seventy-four year old white man was first seen on consultation at the Dental Clinic of the Toronto General Hospital on August 7, 1953.

CHIEF COMPLAINT

The patient presented with moderate swelling of the left side of the face. There was tenderness when he used his lower denture, and on pressure.

HISTORY OF PRESENT ILLNESS

The patient had noticed that for about one month he had experienced a slight ache in lower left jaw on placing his pipe in his mouth. Ten days ago the pain had become more pronounced. At the same time he noticed a lump over his jaw, and this had increased in size since. A slight throbbing pain was present most of the time. It seemed to feel slightly warmer than the rest of his face. He had no fever, chills or sweats.

PAST MEDICAL HISTORY

Non-contributory.

EXAMINATION FINDINGS

Clinical examination revealed a swelling over the body of the left ramus, about one inch from the angle of the jaw. It was round and about 2 cm. in diameter.



FIG. 1.

Taken in the Postero-anterior view, and showing the unerupted tooth in situ.



FIG. 2.

Lateral Jaw Plate taken preoperatively, and showing the relation of the mandibular canal to the unerupted tooth.

It was very indurated peripherally, with softening towards the centre. There was a colour change centrally and a fistula which was discharging a serous, pustular liquid. It was difficult to ascertain whether the mass was attached to the mandible, but it appeared quite immobile.

Extra orally there was nothing outstanding, except for the lesion already

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described. The lips, oral vestibule, floor of the mouth, tongue, cheek mucosa, hard and soft palate, oro-pharynx and edentulous alveolar processes and gums appeared normal. He was wearing old, poor-fitting and highly stained dentures.

It was felt by the medical man who had first examined the patient that Actinomycosis had to be ruled out. Here is a quote from the writer's note in the patient's history on August 7, 1953—"I don't feel that it is Actinomycosis. There is as yet no evidence of multiple fistulae, and the discharge does not have any 'sulphur granules' appearance. I believe that the lesion is of a pyogenic nature.

Advise (1) Culture and smear of discharge.

(2) Posterior — Anterior and lateral jaw plates.

(3) Institution of drainage might be feasible."

The pathologist's report was negative for Actinomycosis; no bacteria was reported, and the culture exhibited no growth.

The radiological report was as follows:

"Postero-anterior and lateral films were made of the mandible. These show an unerupted left molar tooth with a surrounding capsule. The appearances virtually constituting a dentigerous cyst. No evidence of destructive bone change is seen. The mandible is otherwise normal and edentulous. A soft tissue swelling is seen over the region of the dentigerous cyst."

LABORATORY FINDINGS

Routine urine and Wasserman were reported negative. The hemogram was as follows:—

Hemoglobin	81%
R. B. C.	4,880,000
W. B. C.	9,100

The following orders were left for the patient on August 16, 1953:

1. Nembutal gr $\frac{1}{155}$ h.s.
2. Nothing by mouth after midnight.
3. Saline enema h.s., if bowels not evacuated today.
4. Shave neck and face.

5. Morphine Sulfate gr $\frac{1}{4}$ at 8.15 a.m. on 8/17/53

6. Atropine gr 1/150 at 8.15 a.m. on 8/17/53

The following morning, August 17, 1953, the patient was brought to the operating-room. Under Sodium Pentothal, nitrous oxide and oxygen anesthesia an endotracheal tube was passed through the nostril. The left side of the face and neck was prepared with Cetavlon and sterile drapes applied in the usual manner to allow visualization of the angle of the left mandible and inferior portion of the ramus. An incision was made in the shadow of the mandible at the angle and extending for a distance of about two inches forward. By means of sharp and blunt dissection the wound was extended down through the skin, subcutaneous structures, superficial cervical fascia and the platysma muscle. Hemostasis was maintained by clamping and tying all bleeders with 000 plain catgut. The external maxillary was identified, clamped, cut and transfixed. The periosteum was retracted from the buccal aspect of the mandible. The bone overlying the unerupted molar was removed with burs and chisel and the tooth was delivered in toto. There was a large cystic mass surrounding the tooth. This was carefully curetted and the specimen submitted for pathological study. A rubber drain was inserted into the wound. The underlying structures were closed in layers with 000 plain catgut and the skin incision with interrupted medium black silk. A dressing was applied and the patient returned to his room in good condition.

POST OPERATIVE ORDERS

1. Soft diet as tolerated.
2. Up as desired.
3. Demerol 75 mgm. 2.4 h, p.r.m. for pain.
4. Dicrysticin 2 cc's b.i.d.
5. Change dressing p.r.m.

The patient's post-operative recovery was uneventful. The rubber drain was removed in approximately forty-eight hours and the sutures on the fifth operative day.

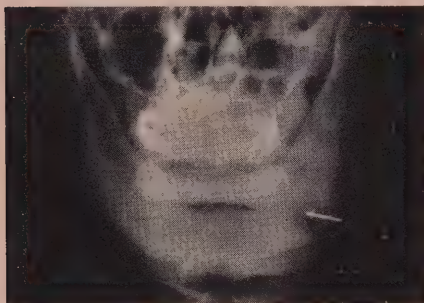


FIG. 3.

Posterior—Anterior view taken Postoperatively.



FIG. 4.

Postoperative Lateral Jaw Plate showing that the tooth has been removed, and that the nerve was maintained intact. This also shows slight break in the lower border of the mandible.

The specimen was reported as follows:

"This is fibrous tissue showing areas of intense infiltration with acute and chronic inflammatory cells. There is in one area some stratified squamous epithelium to be seen but it is quite regular and normal."

A progress film showed that the tooth was removed and the area cleaned out. There appeared a slight discontinuity in the lower border of the mandible.

The patient was discharged on August

24, 1953, and at this writing new dentures are being constructed for the patient in the Dental Department of the Toronto General Hospital.

185 St. Clair Ave. W.,
Toronto, Ontario.

Resolution Passed By the Board of Governors of the Canadian Dental Association, May 12th, 1955.

Whereas tooth decay, by affecting the vast majority of people in Canada, has come to be recognized as one of the major public health problems of our time, and

Whereas studies covering a period of over thirty years under the widest variety of controlled conditions have marked fluoridation as one of the most widely studied of public health procedures, and

Whereas such studies reveal that fluoride in the recommended amount of 1 part of fluoride to 1 million parts of water is safe from any ill-effect and is effective in reducing tooth decay by approximately two-thirds, and

Whereas fluoridation benefits children and the benefits extend into adult life, therefore be it

Resolved, that the Canadian Dental Association reiterates its recommendation to the people of Canada that communities having a public water supply adopt a procedure for adjusting the fluoride content of their water supply, and for this purpose seek competent dental, medical and engineering advice.

ABSTRACTS

Toothbrushing procedure for orthodontic patients.

by GUY ALDEN WOODS, Jr., D.D.S., M.S.

American Journal of Orthodontics, May, 1955.

Oral hygiene has not been adequately described in the orthodontic literature. The importance of toothbrushing has been emphasized time and time again, but how the teeth should be brushed, when the teeth should be brushed, and why the teeth should be brushed have been neglected.

It is questionable just how much of an effect toothbrushing has on the incidence of caries. However, the cavities that occur on the cervical portions of the teeth can be prevented by proper cleansing.

Studies on the effect of selective desalivation on the dental caries incidence of albino rats.

by ABRAHAM SCHWARTZ and JAMES H. SHAW.

Journal of Dental Research, April, 1955.

Increased rates of initiation and progression of carious lesions after surgical removal of some or all of the principal salivary glands have been reported in the laboratory rat under a variety of conditions. Similarly, a substantial increase in susceptibility to tooth decay has been observed in Syrian hamsters and in cotton rats after the extirpation of the major salivary glands.

The greatest severity of caries was ob-

The teeth should be brushed soon after eating in order to obtain the maximum benefits of toothbrushing. There are other methods of caries prevention that must not be ignored. They include restriction of sugar in the diet, use of fluorides, proper band construction, proper band cementation, etc. Toothbrushing is equally important in preventing immediate and future periodontal disturbances, and halitosis. Toothbrushing has certain psychologic and aesthetic values, as well.

The patient must be properly motivated or he may be one of the many who will not make the required effort to maintain a clean mouth. Consequently, certain psychologic principles must be followed in instructing the patient about oral hygiene measures.

served in the group where the parotid and submaxillary glands had been extirpated. The present studies were undertaken to determine in greater detail to what extent relative degrees of caries could be obtained by extirpation of single pairs or combinations of pairs of salivary glands.

Relative amounts of dental decay were produced in the white rat by removal of one or more pairs of salivary glands.

Sham operations did not increase the caries incidence above that of the control rats. The removal of only the extraorbital lacrimal glands or only the major sublingual glands resulted in no significant increases in caries incidence as compared

to controls. Highly significant increases in caries resulted in those animals which were deprived of either the submaxillary or parotid glands.

Extirpation of the major salivary glands to one side resulted in caries scores on that side which were significantly greater than on the intact side, and did not cause a significant increase in the caries scores on the intact side.

In groups of rats where combinations of the submaxillaries and sublinguals, parotids and submaxillaries, or parotids and sublinguals were extirpated, the increase in caries incidence varied from barely significant to highly significant in comparison with controls. These scores were not uniformly greater than when

only one of the two pairs was removed, possibly due in part, to the increase in weight which was observed in the remaining glands.

Removal of the extraorbitals, the sublinguals, the submaxillaries, the parotids, or combinations of pairs of these glands resulted in significantly less decay than when all these major salivary glands were removed simultaneously.

These studies demonstrated that the parotids were the most important of the salivary glands in relation to caries resistance in the white rat. The submaxillaries exerted almost equal influence, while the major sublinguals and extraorbital lacrimal glands were of much lesser importance in this respect.

Chronic sialadenitis and sialography.

by ROGER G. GERRY, Commander (DC) USN, and EDWIN L. BEIGMAN, Lieutenant Commander (MC) USNR.

Oral Surgery, Oral Medicine and Oral Pathology, May, 1955.

Chronic sialadenitis is a recurrent swelling of the submaxillary or parotid salivary glands, which may or may not be accompanied by pain, tenderness, and elevation of temperature. While the most apparent clinical characteristics, that is, recurrent enlargement and pain, are similar in chronic sialadenitis of both the submaxillary and parotid glands, actually chronic submaxillary sialadenitis and chronic parotid sialadenitis have little in common and may be considered almost as two separate disease processes.

The aetiological factor in chronic submaxillary sialadenitis is almost invariably a calculus, or recurrent calculi, and is easy to treat. When acute infection is present it should be controlled with antibiotics, incision and drainage, and the usual symptomatic therapy. Duct calculi,

when present, should be removed as early as is possible. Stricture of the principal duct frequently may be corrected with repeated dilatation. However, presence of large calculi within the substance of the gland, or history of repeated episodes of sialadenitis, usually indicates excision of the gland involved.

The aetiology of chronic parotid sialadenitis is more obscure, but it is likely that primary bacterial infection is an important factor. Patients who have had acute endemic parotitis, or mumps, as adults, seem to be especially prone to the disease.

The treatment of chronic parotitis is far less satisfactory at present than that of chronic submaxillary sialadenitis, as in general excision of the parotid gland is not surgically feasible in the management of chronic parotid sialadenitis. When duct strictures are present, as sequelae of mumps, trauma, etc., the gland seems to respond well to stretching of the strictures whenever indicated. When suppuration is present, the choice of antibiotics should be influenced by the nature of the pyogenic organism.

Dr. Reyburn R. McIntyre Installed as President of The Canadian Dental Association

Dr. John Clay of Calgary, a Past-President of The Canadian Dental Association served as Installing Officer and expressed himself in the following words:

"It is an honour and a particular pleasure for me to be given the privilege of installing in the high office of President of the Canadian Dental Association, Reyburn R. McIntyre. For many years I have been in close association with him, and I may also say with his very nice wife, Sybil, who sits before me. During that time I have watched his growing skill and his knowledge in his profession and his continual service for the advancement of Dentistry and his fellow practitioners.

"While the young man who is now known throughout Canada as "Mac" was born in Eastern Canada, he hastened at a very early age, as soon as he was aware of this disadvantage, to move out West. With his family he settled in Manitoba. After obtaining his matriculation, he began the study of Dentistry. This was interrupted by his entering the Army in the First World War, and shortly after he completed his course and graduated from the University of Toronto.

After a few years' practice at Morden, Manitoba, he moved to Calgary. Following some years of general dentistry, Dr. McIntyre limited his practice to orthodontia, and was awarded the first Specialist Diploma from the University of Alberta.

I would like to just digress a moment and express to the young blood of the organization, those specialists in Orthodontics who now take the field, and apologize for saying "Orthodontia," but we of the older school aren't quite able to change our ways and our nomenclature, so I will still stay with "Orthodontia," with my apologies to these young men.

During the Second World War, Dr. McIntyre was in charge of the Department of Orthodontia of the University of Alberta, commuting from Calgary to Edmonton until the year 1947. Since then he has held the appointment of Honourary Lecturer in Orthodontia.

He has been President of the Calgary



DR. REYBURN R. MCINTYRE

President, The Canadian Dental Association

Dental Society and the Alberta Dental Association, and for some years has been the representative on the Board of Governors of the Canadian Dental Association, the representative from the Province of Alberta.

He was the first Chairman of the Orthodontics Section of the Canadian Dental Association.

Since retiring from practice in 1953, he has devoted a great deal of time to the development of preventive orthodontic treatment throughout Alberta.

He is a Fellow in the International College of Dentists, and is continually active in advancing the profession of Dentistry.

Dr. McIntyre, you are now to be installed as President of the Canadian Dental Association for the coming year.

You will have many problems, and many hours of labour which will require wisdom, patience and energy. Many of the men here know your capacities. To those who do not, I can say with assurance that when your term is ended, and the record complete, our Association will have passed another milestone on the road to greater strength and usefulness."

Dr. McIntyre, having been installed as President, then addressed the meeting:

"I want, first of all to thank Dr. Clay for his kind remarks. I am more flattered at the things he did not say . . . he had ample choice. But I am still not too old to be flattered.

"I read something the other day and I quoted it to one or two of you here. It was a remark of Arthur Godfrey when someone said, 'We are all one day older than we were yesterday.' Arthur Godfrey said, 'I am glad I am getting older . . . If I wasn't getting older I would be dead.'

"Now, you will all sympathize with me, I am sure, in my inability to adequately express my appreciation of the honour that has been accorded me. I feel lucky though in the fact that I shall have with me during the next year the finest Executive Committee the Canadian Dental Association has ever had, and we have an extraordinarily fine Board of Governors. We have a num-

ber of very excellent committee men, the Chairmen and their members.

"The Dental Profession of Canada, I, personally, think is in a better condition than it has ever been, and I am saving the good wine until the last. All of you realize, I hope, the great asset we have in our present permanent Secretary, Dr. Gullett.

"Now, to all of you people again, my very sincere appreciation. I am going to say *our* very sincere appreciation, because my wife sits over there. She, too, is in on this, you know. Her name is Sybil and she would appreciate it if you would call her that.

"Now, I have been allotted a matter of three minutes and I am quite sure it is up. Again, my appreciation."

Dr. P. G. Anderson is presented with the Past-President's Jewel by Dr. John Clay

"The installation of a new President is a high moment in the life of the Canadian Dental Association. For the retiring President it is the laying down of the reins, and the end of an arduous period of service in his profession. He joins the group of men, some 50 strong, who through the years have given their best to build from nothing the dynamic Association of which we are so proud.

"I would not suggest, nor would Dr. Anderson, our Chief Officer for the last year, suggest that the great progress and honoured position which has been achieved, has come only from the Presidents, nor do they come only from the President and General Secretary, whose wise counsel and unfailing energies sustain and guide. While they lead, and lead well, I should like to pay tribute to the men who have contributed so much to the advancement of our Association.

"I should like to repeat a few lines from a Greek poet which was quoted at the University of Toronto a short time ago:

*Not by her houses neat, nor by her well
built walls,
Nor yet again by docks nor streets, a
City stands or falls
But by her men.*

*Not by the joiner's skill, nor work in
wood or stone,
Comes good to her or ill,
But by her men alone.*

"You, Dr. Anderson, have been a leader of able and loyal men for the past year. For many years you have been a great teacher and a friend of the men of the profession of Dentistry from far-flung coast to far-flung coast.

"Here in the 'centre' of Canada and in your own home, we join in thanking you for your self-sacrifice and inspiration to the members of our profession. Your term as President ends with the sure knowledge that under your leadership the Profession of Dentistry in Canada has moved forward. This has been a noble year of achievement and it gives me great pleasure to speak for our members, and to say 'Thank you' for all you have accomplished.

"It is now our pleasure to present you with the Past President's Medal of the Canadian Dental Association. Your contribution to Canadian Dentistry has been great, and I am sure that you will continue to be a guide and inspiration in the years to come."

Canadian Dental Association Art Salon

The Art Salon at the C.D.A. Convention held at the Royal York Hotel, Toronto, May 15-18, featured 104 paintings, 25 "budding artists'" paintings, 40 photographic enlargements, 198 colour transparencies, 52 miscellaneous crafts, such as scotchlite art, sculpture, woodcraft, plaster plaques, miniature gold castings, ceramics, leathercraft, plastic work, etc. These items were contributed by dentists, their wives and associates from various parts of Canada.

The Art Salon was officially opened by His Worship Mayor Nathan Phillips of Toronto on Monday, May 16. The estimated attendance during the three-day period was over 1500.

Four well-known art critics, Cleeve Horne, R. York Wilson, Paavo Airola and Fritz Beuhler, selected the six best paintings. These were:

Italian Fishing Boat

by Dr. M. Levitt, Montreal, Que.

New Dundee, Ontario,

by Mrs. H. F. Magson, Willowdale, Ont.

Old Barns, Palgrave,

by Mr. E. F. Mellish, Toronto, Ont.

Port Hope Harbour

by Mrs. R. F. Richardson, Port Hope, Ont.

Trees

by Miss Lillian Sarafinchan, Vegreville, Alberta.

In My Father's House

by Dr. E. B. Sisley, New Toronto, Ont.

Visitors also cast ballots for their favourite items in each category. The total number of votes received was just under 1000.

The popular vote by ballot was as follows:

Paintings:

First — "Lieutenant Jowal, Gurkha," by Dr. E. J. McNeice, Weston, Ontario.



His Worship Mayor Phillips of Toronto cuts ribbon to open the Canadian Dental Association Art Salon, on Monday morning, May 16, as Dr. P. G. Anderson, President of the C.D.A., Dr. L. R. Braden, President of the O.D.A. and Dr. Wm. G. McIntosh, Convention Chairman, look on.

Second — "Early Snow" by Dr. W. W. Breslin, Toronto, Ont.

Third — "Haliburton Autumn" by Mrs. T. O. Wynne Jones, Toronto, Ontario.

Photographic Enlargements:

First — "Selected" by Dr. Murray Wertman, St. Catharines, Ont.

Second — "Selected" by Dr. Don Teskey, Toronto, Ontario.

Third — "Winter Scene" by Dr. J. H. Tripp, Cobourg, Ontario.

Colour Transparencies:

First — "Light and Shadow" by Miss Barbara Babbit, Toronto.

Second — "Swan Lake" by Mrs. Eileen Bruce, Toronto, Ontario.

Third — "Frog" by Mr. George H. Lofts, Toronto, Ontario.

Miscellaneous:

First — "Ceramics" by Mrs. T. R. Marshall, Toronto, Ont.

Second — "Ceramics" by Mrs. Madge Harvey, Toronto, Ontario.

Third — "Miniature Castings" by Mark Zimmerman, Toronto.

Testimony on the safety and effectiveness of fluoridation has been presented by Grand Rapids physicians specializing in the fields of research, surgery, cardiology, dermatology, pathology, ophthalmology, urology and public health. In view of the concerted effort of antifluoridationists in Michigan to obtain a state law that would prohibit the fluoridation of public water supplies, the Kent County Dental Society obtained the written opinions of practising physicians who have had an opportunity to observe systemic effects on individuals who have been consuming fluoridated water for ten years.

Dr. W. B. Prothro, Grand Rapids health director, pointed out that there actually had been a slight decrease in the death rates for heart disease, nephritis, intracranial lesions and cancer—the diseases most frequently reported by antifluoridationists as having increased since 1945. He said it should not be concluded that the decrease necessarily resulted from water fluoridation but that it did refute the argument that water fluoridation contributes to an increase.

Dr. Charles I. Taggart brings the greetings of the American Dental Association to the Canadian Dental Association-Ontario Dental Association Convention

"It is indeed a pleasure and an honour for me to be here today, representing, as I do, the Officers and Trustees of the American Dental Association, in bringing you their official Greetings.

"Five years ago I attended the Canadian Dental Association meeting here in Toronto, in a similar capacity. The theme of your meeting at that time was '75 Years of Dental Education.'

"This year I note that the theme is 'Progress Through Research,' a timely subject for 1955.

"Many dramatic medical discoveries have occurred in the past 15 years, and it is easy to document the progress in the general public health, due to these discoveries.

In the same period Dental Research, although meagerly supported, has come up with one of the greatest public health measures of our time, namely, the fluoridation of public water supplies.

"This measure for the prevention of dental caries is now in operation in 1,062 communities throughout the United States, serving a population of 20,350,000 persons.

"I note with interest that Brantford, Ontario, will shortly complete ten years of a fluoridation study. Grand Rapids, Michigan, and Newburgh, New York, have already reached that mark.

"Reports from these and numerous other independent studies provide direct evidence attesting to the premise that the theory of fluoridation is now an indisputable scientific fact.

"It is interesting to note that fluoridation programs have not been limited to Canada and the United States but have gained acceptance throughout the world.

"This great public health measure has been inaugurated in one or more cities in Brazil, Colombia, Cuba, Germany, Holland, Japan, New Zealand and Sweden.

"While the adoption of the program has met with some opposition, as has been the case with other public health measures in the past, never before in the history of public health has a procedure been backed by such a wealth of supporting evidence as to its safety and effectiveness.

"We know that the procedure is not a cure-all for dental decay. We must not de-emphasize such measures as the reduction in the consumption of sweets, removal of carbohydrates from the mouth by brushing the teeth immediately after eating, and the procurement of regular dental care.

"On the other hand, where fluoridation is possible, the marked effect, the safety and simplicity of this preventive, overshadows all other means of dental caries control.

"Dental decay and the loss of teeth as a result of decay is staggering and needless. The loss of permanent teeth in children and young adults is shocking. It is estimated that forty per cent of our children have had at least one permanent tooth removed by the age of fourteen, and at the age of thirty-five, one-quarter to one-half of the population in the United States alone has or should have artificial dentures.

"I am not sure of the figure for Canada although I know that dental disease is a major health problem in both our countries.

"There is little or no excuse for the wide extent of dental caries when the knowledge is at hand for prevention and control.

"Fluoridation is 'Progress through Research.'

"Let us never cease our efforts toward the ideals of Dentistry, including the support of Dental Research on an ever widening scale.

"May I reiterate my personal pleasure at being with you today, sharing the problems, the friendships and the satisfactions of our great profession. Thank you, very much."

A review of the research back to 1906 on fluoridation's development as a public health procedure is reported in the June issue of The Journal of the American Dental Association, by Dr. A. P. Black of Gainesville, Fla., head of the department of chemistry at the University of Florida. "Fluoridation has now reached full stature as a recognized health procedure, and another great landmark in man's long fight against disease has been passed," he observed. The article contains refutations of the more common fallacies circulated about the program. Reprints will be included in the A.D.A. kit of fluoridation information materials when the kit is revised.

PUBLIC RELATIONS

The Achievements of Dentistry

Several years ago a public relations expert addressed a dental convention. He revealed the shocking information that the dental profession is held in relatively low esteem by the public. The professions of medicine, engineering and architecture were regarded very highly.

Recently, this same gentleman was invited to address a small group of dentists who were interested in this problem. In an informal discussion it was pointed out to him that dentistry has matured to become one of the most complex and comprehensive of all the professions. It no longer had the mechanistic approach of bygone years. As a matter of fact, no other profession required as much complete knowledge of so many subjects.

For example:—Dentists are very competent surgeons. Some very complicated and skillful operations have been performed by dentists which can compare favourably with those accomplished by medical surgeons. They are also capable anaesthetists. In fact, it was a dentist who started us off on general anaesthesia.

Dentists are well grounded in the field of pathology and bacteriology and have produced some excellent studies. At one of the great American Universities the professor of bacteriology for both medical and dental students is a dentist. Biochemical, histological, bacteriological and histopathological subjects are taught to dental students at a very high level, comparing favourably with the studies of medical students.

Our mechanical achievements have be-

come masterpieces but the modern dentist combines his technical skill with his biological training. We have become super-craftsmen in metals, such as gold, platinum, chrome, cobalt and others. Our techniques are highly developed, both for accuracy and beauty.

We are pioneers in plastics and have, by means of this medium contributed greatly to the betterment of mankind technically, functionally and aesthetically. This also applies to ceramics, where no one group has created more beautiful or useful products.

The many facets of dental science require continuous study. In no other profession are improvements going on at a more rapid rate.

Our students are required to study the greatest diversity of subjects on the calendars of the University curricula. Consequently, dentists are conversant with a greater variety of mechanical and biological subjects than are other professionals.

Our public relations friend was very much impressed, stating that this was the first time he had heard these facts and that this information was not available to him when he addressed the dental convention.

Dentists should, with pride, point out their achievements to the public. Dentistry is maturing into a great profession. Let us not keep it a secret but enthusiastically inform our patients of its great progress in so many directions. Our patients will appreciate us more.

EDITORIAL

The annual convention -- 1955

"When we fail to praise a man that deserves praise, two sad things happen; we run a chance of driving him from the right road for want of encouragement and we deprive ourselves of one of the very happiest of our privileges, the privilege of rewarding labour that deserves a reward." Undoubtedly Ruskin was not considering specifically the individuals whose efforts terminated in the splendid convention just recently completed, but nevertheless his words are particularly apropos.

The Joint Convention of the Canadian Dental Association and the Ontario Dental Association, held during the month of May in Toronto was the largest meeting of Canadian dentists ever held. Dentists numbering over eleven hundred met in conclave at the Royal York Hotel and there a program of highest merit was provided for their enlightenment and enjoyment. The hours of careful planning spent by the Convention Committee were justified by the outcome of their decisions.

To speak of highlights would be futile. Seldom has a programme been prepared which had such sustained interest. From the first musical notes of the Sunday Evening Musicales, to the last explanation of some particular technique at the Table Clinics, there was some activity either social or scientific which was of interest to all conventioners.

The Concert Hall was filled almost to capacity to hear the delightful programme of Opera Miniatures. The works of art, on display at the Art Salon, were

a source of genuine delight for those who viewed them following the musical programme.

Monday morning saw a continuance of the annual Dental Public Health Breakfast—a function organized by the Dental Public Health Council of Ontario. Dr. Gordon Bates, General-Director of the Health League of Canada spoke to the group on the general subject of Health as a National and International Objective giving specific reference to the desirability of the institution of the fluoridation procedure.

The remainder of the morning was devoted to an exploration of the commercial exhibits and a viewing of the very excellent scientific motion pictures.

The Canadian Dental Association Luncheon will long be remembered for the superlativeness of the Presidential address. Dr. Anderson's deliverance of "A Philosophy for an Organized Profession" received, on completion, a standing ovation. The induction of the new Association president, the Honourary Membership conferred on Dr. H. K. Box, and the presentation of his portrait to mark the culmination of his teaching association with the Faculty of Dentistry of the University of Toronto were other highlights of this event.

During the afternoon the three major essays were presented. The Dean of the University of Alabama School of Dentistry spoke upon "Recent Advances in Our Knowledge of the Relationship of Diet to Dental Caries." Dr. Volker demonstrated that the cariogenicity of

carbohydrates depended much more upon their physical nature than upon the total amount consumed.

The Grieve Memorial Lecture, delivered by the then President-elect of the Canadian Dental Association, Dr. R. R. McIntyre, dealt with many of the preventive measures which should be employed by orthodontists and general practitioners alike.

"Recent Developments in the Concept of Oral Sepsis" was the subject of an essay prepared by Dr. Harold K. Box, and delivered by his son, Dr. Keith Box. The paper in the main concerned itself with a consideration of hidden septic foci which are difficult or impossible to detect clinically, but, however, are frequently present.

The Class and Fraternity Dinners during the evening proved to be highly successful functions.

The Group Clinic programme commenced on Tuesday morning and was repeated the following day. Dr. Winston C. Bushell, of Montreal, presented an evaluation of the most commonly employed inlay techniques giving special emphasis to the hydrocolloid method. Winnipeg's Dr. Howard J. Merkeley, enunciated a procedure for the complete mandibular denture after stressing the form, location, action and importance of the essential and accessory masticatory muscles. Dr. E. Carl Miller of Cleveland, Ohio, probably the best known clinician in the subject of silver amalgam, covered the topic well under the title of "Clinical Factors in the Use of Silver Amalgam."

Dr. George A. Morgan of Toronto illustrated many of the various diagnostic problems occurring in the mouth, and later correlated his conclusions with the surgical procedures necessary for their correction. Premedication of the apprehensive patient, and control of post-operative pain received the attention of Dr. Floyd D. Ostrander of Ann Arbor, Michigan. Dr. Aaron L. Posen, of Toronto, chose as his clinic subject "Orthodontic Problems as Related to the Gen-

eral Practitioner." Dr. Posen indicated the problems which dentists in general practice could well undertake themselves and covered his subject by discussing normal occlusion and deviations therefrom and resultant treatment.

The planning of removable partial dentures was discussed by Dr. Clyde H. Schuyler, from New York City, and Dr. Henry Tanner of Bethesda Maryland presented the timely topic of "The Adaptation of Modern Instruments and Increased Speeds to Restorative Procedures."

Dr. Edward C. Thompson from Urbana, Illinois, discussed the management of surgery for removal of teeth and complications attendant thereto. Oral malignancies and certain fairly common diseases of the mouth were considered. The second clinician from Montreal, Dr. Vincent Tremblay covered a rapid and effective technique for treating teeth with pulp involvements.

Much publicity accrued from the clinic given by Dr. C. H. M. Williams of Toronto when Dr. Williams presented a man over sixty years of age who had, from a dental standpoint, a perfect dentition. It perhaps is a mark against our civilization when a condition exists which, although essentially considered normal is actually so rare that it becomes newsworthy. Dr. Williams' presentation discussed the factor of wear as it affects the development of jaws and the arrangement of teeth, temporo-mandibular joint function, functional efficiency of teeth, and facial proportion.

Dr. Arthur W. S. Wood of Toronto conveyed in a very practical way some of the everyday problems encountered in the treatment of children. Dr. Owen Yule of the same city, considered materials used for taking impressions for fixed bridges.

The Dental Public Health Committee of the Ontario Dental Association arranged a most interesting clinic, which in effect was modelled somewhat upon the Seminar programme developed by

the committee. Dr. Marjorie Jackson concerned herself with the examination of the child patient while Dr. Morley Crockford demonstrated various operative procedures. Two orthodontists, Dr. W. K. Shultis, and Dr. J. T. Crouch presented respectively, "Mixed-Dentition Analysis" and "Appliances in Action."

"Patient Selection" a clinic presented by Lt. Col. I. A. L. Millar, Major A. T. Roger, and Major C. R. Covey of the R.C.D.C. proved to have direct application to the private practice of dentistry.

The Ontario Dental Association Luncheon saw the installation of Dr. Harry Bateman as president and the address of Dr. Otto Holden, Chief Engineer of the Ontario Hydro Electric Power Commission, on the "Engineering Aspects of the St. Lawrence Power Project" indicated the magnitude of the undertaking.

A new feature took place on Tuesday afternoon when eight, twelve minute presentations were made upon a variety of subjects. These short talks were informative and interesting.

The Presidents' Ball, in Gay Ninety motif, was an unbounded success and President and Mrs. Anderson and President and Mrs. Braden were gracious hosts.

The Table Clinic programme of Wednesday afternoon saw the employment of thirty-four individual clinics. As always, the conventioners found much practical information and personalized instruction from this portion of the meeting.

This convention will be difficult to emulate and the profession owes a debt of gratitude to those who made its occurrence possible.

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions

A.M.A. COUNCIL ON PHARMACY AND CHEMISTRY: Fundamentals of anesthesia. 3rd ed. 1954. 279p. illus.

BRABANT, H., KLEES, L., et PHILIPPART, R.: Précis d'histo-pathologie de l'organe dentaire. 1953. 277p. illus.

DELAIRE, J.: L'emploi du greffon cutané cylindrique dans les bcs de lièvre totaux et les divisions palatines. (Indications et techniques). 1953. 62p. illus.

JEANNERET, M.: L'inlay à crampons et ses applications. Le parallélisme par l'isodromie. 1953. 270p. illus.

LEPOIVRE, M.: Anomalies dento-cranio-faciales. 1954. 127p. illus.

MANN, W. B.: Doctors are people. 1954. 83p. NESPOULOUS, P., et CARLIER, G.: Dentisterie opératoire. 1954. 649p. illus.

U.S. DEPARTMENT OF THE ARMY: Technical Manual No. 8-226. Dental Laboratory Technicians. 1954. 319p. illus.

Economic Security

Why Not Whole Life?

(Part II)

by E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.,
Consulting Economist, and Administrator of the
C.D.A. Plan

Having given consideration in the previous article to the inefficiency of Whole Life Assurance for protective purposes of a professional man, we pass now to a consideration of this type of contract for the purpose of producing income for the wife after decease of her husband during retirement.

The general question of provision of such an income is, of course, an important one, since the normal life expectancy of a woman exceeds that of a man by 4.31 years at equal ages and women frequently are younger than their husbands.

There is no question, therefore, of the need of an income for the wife for the years when she is left alone; there is the question only of the best means.

In considering Whole Life Assurance for this purpose, it must be borne in mind that if the full sum assured is to be produced, it would have been necessary to maintain the contract by payment of the regular annual or monthly premium throughout the period of retirement before decease as well as before retirement. On the average, this will be 16½ years, if retirement takes place at age 65. Maintenance of the contract thus will be a charge against retirement income—obviously an undesirable circumstance. If the contract be taken as "Paid up" at age 65, there would be an average reduction of 20 to 25% in the principal sum and, thence, a similar reduction in the income

for the widow when the principal sum is used for this purpose.

Of equal importance is the question of the amount of income which will be produced for the widow. It must be borne in mind that the Whole Life Assurance is producing a fixed sum which is unrelated to her life expectancy, and that if it is used to purchase a life income, the amount of that income is not predetermined by her needs, but arbitrarily fixed by whatever her age happens to be when the principal sum is so applied.

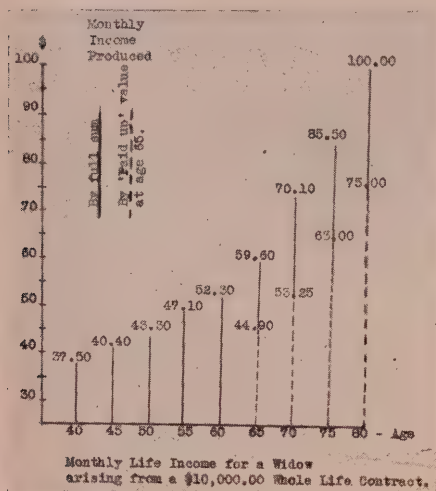
For example: In the circumstances, we have been presuming, of the husband living to normal life expectancy after retirement age and his wife being, say, two years younger, \$10,000 of Whole Life Assurance in full effect would purchase an average of \$90.00 per month for the remainder of her life. If the contract had been taken as "Paid up" at age 65, the same contract would purchase \$67.50 per month.

Again—if the husband exceeds normal life expectancy by, say, five years, then the full contract would purchase \$100.00 and the "Paid up" contract \$75.00.

But, as many men die before attainment of normal life expectancy as will go beyond it, and if he were so deceased at, say, age 66, the sum produced for his widow would be \$57.50 per month by the full contract, and \$43.12 by the "Paid up" contract.

Again—if the husband should be deceased prior to retirement, as at age 55, his wife then being age 53, \$10,000 of Whole Life would here produce \$44.50 of life income for her.

Graphically expressed, the various figures are as follows:



The Whole Life form of contract therefore, as a means of producing income for the widow after the death of her retired professional-man husband, is an awkward and inefficient instrument.

It entails payment of premiums out of retirement income, or else a substantial diminution of the income.

At the same time, the inflexibility of a principal sum unrelated to the widow's needs, or life expectancy, results in great variations of income which fluctuate all the way from an obviously inadequate amount, to an excessive amount, which means that a great part of the original premiums have been wasted.

In Part III, the concluding article in our study of "Whole Life", we shall consider the extent to which this form of contract provides income for the dental practitioner himself in retirement.

Committees and Councils

Hospital Dental Services Committee

This Committee has been studying the ways and means of assessing hospital dental services for accreditation. Accreditation encourages the raising of professional standards in the hospital services and provides valuable information for C.D.A. Headquarters.

It is the hope of the Committee that hospital administrators and dentists on their services will wish to have the service accredited. This is the prime objective of the Committee for next year.

The Corps

Brigadier Wansbrough returned recently from Europe where he inspected dental facilities with the 1st Canadian Infantry Brigade in Germany and No. 1 Air Division in France.

Colonel F. R. Drewry concluded the inspection of Militia Dental Units across Canada in the R.C.D.C. Militia General Efficiency Competition.

Lt.-Col. A. C. Leman has taken command of No. 35 Canadian Field Dental Unit in France, succeeding Lt.-Col. W. R. Cunning-

ham who will be appointed Senior Dental Officer, Camp Borden, on his return to Canada.

Each year there has been an increase in correspondence relative to the establishment of dental services in hospitals. This has been most gratifying and further inquiries are welcomed by the Committee.

D. M. Tanner, Chairman.

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Summer Camps for R.C.D.C. Militia Units in 1955 will be conducted at Sarcee, Alberta; Niagara-on-the-Lake, Ontario; and Utopia, New Brunswick. R.C.D.C. regular officers will attend each Camp to assist in the training programme.

Colonel C. B. Climo represented the D.G.D.S. at the annual convention of the C.D.A.-O.D.A.

The Provinces

Quebec

Three dental groups recently held meetings at which officers were elected. They are:

American Academy of Dental Medicine, Montreal Section—President Dr. V. A. Dubé; Vice-President Dr. E. S. Dorion; Secretary Dr. Alfred Scherzer; other members of the executive committee, Dr. Louis Lepine, Dr. Robert M. Wiener, Dr. Howard T. Oliver.

Alpha Omega Fraternity, Montreal Alumni Chapter—President Dr. H. Caplan; Vice-President Dr. S. Joffe; Corresponding Secretary Dr. D. Steinberg; Recording Secretary Dr. H. Shkurnik; Treasurer Dr. D. Kaplansky; Historian Dr. Fred Vosberg; Librarian Dr. Peter A. Dogen; Editor Dr. Gunther Baer; Sgt. at Arms Dr. M. Lapedis.

Montreal Endodontia Society—President Dr. E. S. Dorion; Vice-President Dr. D. T. Shizgal; Secretary Treasurer Dr. Jacques Belanger.

The closing Dinner Meeting of **The Montreal Dental Club** was held on May 24, 1955, at the Queen's Hotel.

The meeting was held in the form of the final presentation of the University of Illinois Extension Course and dealt with the problem of caries control. The moderator was Dr. Kesel of the University of Illinois.

In discussing the prevalence of caries it was stated that by the age of 40 years, 50% of the population have, or should have, complete or partial dentures.

Bacteria were discussed as the aetiological factor in the formation of caries, due to conversion of sugars, and carbohydrates to lactic acid, and the formation of plaques on the teeth. It was shown that Sucrose was the most important, due to the fact that it was most common.

Control of caries is by:

Prevention of Formation

- (1) By diet
- (2) Fluorine
- (3) Correct Oral Hygiene

Remedial Prevention

- (1) Prophylactic measures
- (2) Operative Dentistry
- (3) Surface bonding Agents

Since once the teeth have erupted there is

no evidence of Ca etc., having effect on caries or control of same, fermentable carbohydrates, sucrose, etc., should be kept to a minimum during the formative years of child development.

Fluorine was shown to be the practical, inexpensive manner of controlling caries; and to alleviate the fears of the layman, there is no essential difference in the mortality rate in areas with or without fluorine in the water supply. But it was stressed that fluorine is not a "cure all," and oral hygiene, diet, etc., are still essential factors in controlling caries.

Dr. Ralph Edmison moderated a discussion period, following the course.

Dr. G. Kelly then showed films of Summer and Winter meets at the club prior to 1937.

The meeting concluded with a film of the 1954 Canadian Open Golf Tournament.

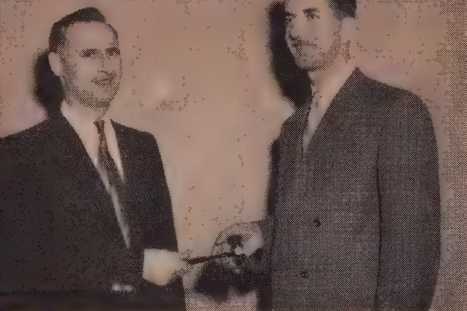
Alberta

Dr. Stuart Fleming of Red Deer was elected president of the **Central Alberta Dental Society** at a meeting held in Red Deer recently. Dr. O. L. Oatway conducted the meeting which was addressed by Dr. H. R. McLean of the faculty of dentistry, University of Alberta. The importance and interpretation of dental X-rays was the topic of Dr. McLean's address.

Other officers are: Vice-President, Dr. D. Culham, Ponoka; Secretary-Treasurer, Dr. Gordon Travis, Red Deer; Directors, Dr. F. J. Leboldus, Rimbey; Dr. L. H. Wright, Stettler, and Dr. C. A. White, Red Deer.

The regular meeting of **Peace River and District Dental Society** was held in High Prairie on May 18, 1955. The guest speaker Dr. Henry Freeland, of Calgary, gave an interesting talk to the members which was followed by a banquet at the Park Hotel.

Present at the convention were: the President, Dr. G. L. McMurray, of Beaverlodge; Vice-President Dr. L. P. Lyman, High Prairie; Secretary, Dr. J. Higa, Grande Prairie, Dr. D. O. Carroll and Dr. C. M. Compton, also of Grande Prairie, Dr. Peter Poonkay, Rycroft; Dr. M. M. Woronuk, Fairview; Dr. B. Boyko and Dr. B. Iwasaki,



DR. ALAN D. FEE

DR. R. H. BLAQUIERE

(Dr. Blaquiere, retiring president of the Edmonton & District Dental Society handing over the gavel to in-coming president Dr. Fee)

Peace River, and Dr. A. Hertz of McLennan.

Following the banquet, the members of the Society were entertained at the home of Dr. and Mrs. L. P. Lyman, where a film of the 1954 Grey Cup game was shown and refreshments served.

On Tuesday, May 3, at the Seven Seas Restaurant, the **Edmonton and District Dental Society** held the final supper meeting for the season.

Dr. R. H. Blaquiere, the retiring president, was in the chair. He reported on the activities of the society for the successful year just concluded and was presented with a plaque in recognition of his services, by Dr. Wm. Orobko, on behalf of the society.

The new slate of officers for the coming 1955-56 season was voted into office. This consists of the following members:

President, Dr. Alan D. Fee; President-Elect, Dr. A. H. Lane; Secretary, Dr. S. G. Geldart; Treasurer, Dr. J. E. Young; Social Convenor, Dr. R. S. Van Alstine.

Directors: Dr. R. H. Blaquiere; Dr. S. D. Fraser; Dr. D. R. Stewart.

A highlight of the evening's program was the conferring of a life membership in the society upon Dr. W. Scott Hamilton, dean of the Faculty of Dentistry at the University of Alberta. Dr. H. R. MacLean presented Dr. Hamilton, and Dr. R. H. Blaquiere on behalf of the society marked the occasion with the presentation of an engraved plaque.

J. M. S.

Nova Scotia

Dr. J. Stanley Bagnall, for more than 30 years a member of the Dalhousie University faculty of dentistry, has been appointed dean emeritus, president A. E. Kerr announced recently.

Dr. Bagnall retired as dean in August, 1954, when he was succeeded by Dr. J. S. MacLean.

Dr. J. T. Lebbetter, of Berwick, was elected President of the **Annapolis Valley Dental Association** at the organization's annual meeting held in Kentville, in the Cornwallis Inn. He succeeds Dr. John Eaton of Wolfville, who held office for the past two years.

Other officers elected include: Dr. B. Lavers, Kingston, Vice-President; Dr. Lin Comeau, Kentville, Secretary-Treasurer; Dr. L. B. Layton, Annapolis, Executive Member.

Prince Edward Island

The annual meeting of the **P.E.I. Dental Association** was held in Charlottetown on May 11, 1955, in the Y.M.C.A.

The following officers were elected: President, Dr. K. A. MacEachern, Charlottetown; Vice-President, Dr. Orville Phillips, Alberton; Secretary-Registrar Treasurer, Dr. Heath MacIntyre, Charlottetown.

Members of the council are: Dr. L. A. Johnston, Montague, and Dr. H. E. Clarke, Summerside.

Manitoba

Dr. Z. Kasloff has been elected President of the **Winnipeg Dental Society**.

Other officers are: Dr. G. Campbell, Vice-President; Dr. M. J. Averbach, Secretary-Treasurer; Dr. W. Krenkow, Clinic Chairman, and Drs. J. P. Beattie and G. H. Merkeley, Executive Members. Dr. T. J. Cook is past president.

British Columbia

Representatives came from all over the province and registration reached the unsurpassed total of 329 at the **Annual Convention of the B.C. Dental Association** which took place in the Hotel Vancouver on Friday and Saturday, May 6 and 7, 1955.

The ballroom, where most of the sessions were held, was a hive of activity at 8:30 on Friday morning. At that hour the doors were closed and the guest speaker drew the names of those who won the door prizes (credit notes for supplies) donated by the two larger supply houses.

Words of welcome were given by the President, Dr. C. M. Whitworth, and by the convention chairman, Dr. H. L. Purdy.

Dr. James M. Mather, Head of the Department of Public Health, Faculty of Medicine, University of B.C., in the opening address stated that in order to provide adequate dental services in the province, not only was a dental school required, but also

a change in attitude toward small-town practice where the shortage of dental personnel is acute.

It is planned to integrate the medical and dental faculties. The appointment of Dr. John B. McDonald, Dental Research specialist from the University of Toronto, as Dental Consultant was announced. His survey will begin in June and take about four months. After his report is received, it will probably be two years before the first dental students are registered.

The chief essayists were men of international reputation: **Dr. John W. Knutson**, Assistant Surgeon-General and Chief Dental Officer of the U.S. Public Health Service, spoke of the dentists' role in promoting fluoridation.

Dr. Maury Massler, Head of the Department of Paedodontics at the University of Illinois, assailed some of our ideas and theories of practice. In dealing with tooth sensitivity after the placement of a filling, he stated that the cause was often leakage of saliva. In fact he said that after an acrylic filling has been placed the tooth may be sensitive because you did not fill the cavity at all! In sterilization of dentine and also as a palliative, zinc oxide and eugenol was found to be the superior medicament. A frequent remark was "You'll think I own stock in a eugenol company." Dr. Massler arrived at his findings after extensive scientific study which will be published soon in the *Journal of Dental Research*.

Dr. Bernard Jankelson of the University of Washington Dental School created havoc with some of our ideas about establishing correct occlusion. In addition to his Friday three-hour lecture on "The Aetiology and Treatment of Occlusion," he held forth on Saturday for three hours at a chair clinic demonstrating occlusion and the correction thereof.

The Georgia Auditorium was the scene Friday evening of the **Public Forum** sponsored by The Vancouver Sun and our Association. Speaking in favor of fluoridation of the communal water supplies were Dr. James M. Mather; Dr. J. L. Gayton, Assistant Medical Health Officer of Vancouver; Dr. John W. Knutson, Dr. Maury Massler, Dr. Richard Cline. Opposing the measure were L. C. Lambert, N.D., (Vancouver) and Mrs. Lydia Arsens, M.L.A. (Victoria).

Chair and Table Clinics in the Ballroom on Saturday covered almost every aspect of dentistry with 40 clinicians participating in a splendid array of talent.

The **Visual Education** films were listed in the program according to time, and one could drop in at a specified hour and review a film of choice on either day.

The Association Luncheon in the Banquet Room was followed by the **Annual Business Meeting of the Association**, presided over by the President. On view at the head table were Executive members and committee chairmen, who made their annual reports at this, the 39th annual business session.

We note that the President offered praise to all his officers and committees (he always does) and he himself recommended that:

1. A three-day convention be held.
2. The average fee schedule be revised every year.
3. The minutes of the annual meeting be reviewed by and acted upon by Executive, to save time at the annual meeting.

These officers were elected: President, Dr. E. E. Martin, Vancouver; President-Elect, Dr. W. B. Milburn, Victoria; Secretary, Dr. R. E. Cline, Vancouver; Treasurer, Dr. M. Nacht, Vancouver; Directors, Dr. W. J. Chambers, New Westminster; Dr. H. L. Coursier, Vernon; Dr. H. L. Purdy, Vancouver; Dr. J. G. Ryan, Vancouver; Dr. W. E. Shaw, Mission; Dr. W. A. MacDonald, Victoria.

In chronicling an event of this nature, it is not possible to give all credit where credit is due, but we are going to single out Dr. Harry Purdy, Convention Chairman, and all his sub-chairmen, for especial praise.

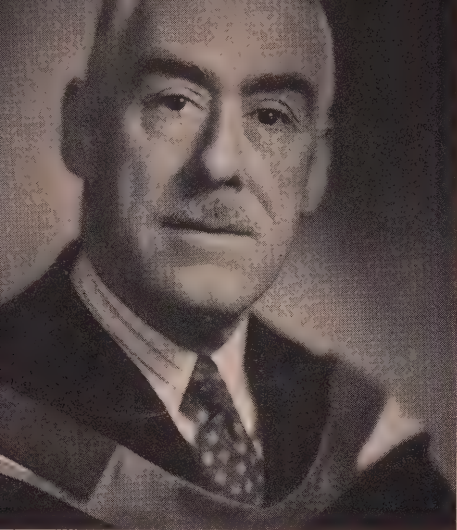
The ladies were well taken care of by Mrs. C. M. Whitworth and her committee, who entertained 137 of the wives. On Friday there was a sherry party and luncheon at the Point Grey Golf Club, with favors for the ladies and a display and talk on flower arrangements as after-luncheon entertainment. The coffee party on Saturday at the home of Mrs. G. A. C. Walley provided an enjoyable opportunity for dentists' wives from all over the province to make and renew acquaintances.

D. H. M.

Ontario

The members of the Board of Directors of the **Royal College of Dental Surgeons of Ontario** for the biennial term 1955-1957 are as follows:

- District No. 1—Dr. C. M. Purcell, Pembroke.
- District No. 2—Dr. W. J. Langmaid, Oshawa.
- District No. 3—Dr. M. V. J. Keenan, Sudbury.
- District No. 4—Dr. R. P. Lowery, Toronto.
- District No. 5—Dr. M. C. G. Bebee, Owen Sound.
- District No. 6—Dr. J. M. Campbell, Chatham.



DR. RICHARD J. GODFREY

*President, The Board of Directors,
Royal College of Dental Surgeons of Ontario.*

District No. 7—Dr. R. O. Winn, Kitchener.
District No. 8—Dr. A. H. Leckie, Hamilton.
Faculty of Dentistry—Dr. R. J. Godfrey.

At the most recent meeting of the Board of Directors of the Royal College of Dental Surgeons of Ontario the following elections and appointments took place:

President, Dr. R. J. Godfrey; Vice-President, Dr. M. C. G. Bebee; Registrar-Secretary-Treasurer, Dr. Don W. Gullett; Associate Secretary, Dr. Wesley J. Dunn.

Committees

Executive: Dr. Bebee, Chairman; Dr. Keenan, Dr. Purcell, Dr. Lowery, Dr. Langmaid.

Discipline: Dr. Lowery, Chairman; Dr. Keenan, Dr. Bebee, Dr. Langmaid, Dr. Winn.

Examiners and Petitions: Dr. Godfrey, Chairman; Dr. Lowery, Dr. Winn.

Government and Legislation: Dr. Keenan, Chairman; Dr. Campbell, Dr. Bebee.

Clinics and Extension Lectures: Dr. Winn, Chairman; Dr. Campbell, Dr. Leckie.

Public Relations: Dr. Langmaid, Chairman; Dr. Campbell, Dr. Winn, Dr. Leckie, Dr. Lowery.

Finance: Dr. Keenan, Chairman; Dr. Lowery, Dr. Purcell.

The following were appointed as representatives:

Faculty Council: Dr. Godfrey, Dr. Lowery, Dr. Gullett.

Senate: Dr. Gullett.

National Dental Examining Board of Canada: Dr. Godfrey.

Canadian Dental Association: Dr. Winn, Dr. P. G. Anderson, Dr. Keenan, Dr. Langmaid, Dr. C. L. Strachan.

Workmen's Compensation Board: Dr. Keenan, Dr. Campbell.

Library: Dr. Gullett.

Research Advisory Board: Dr. Dunn.

The following were elected to office in **The Ontario Dental Association** at the annual meeting in May: Honorary President, L. R. Braden, Ottawa; President, H. R. Bateman, Mount Dennis; President-Elect, J. A. Boyd, Stratford; Historian and Archivist, L. M. Grose, Toronto. Those elected Representatives on the Board of Governors were: District No. 1, E. E. Johns, Kingston; District No. 2, F. H. Shepherd, Toronto, and J. G. Chalmers, Toronto; District No. 3, K. M. Phillips, Welland; District No. 4, C. L. Strachan, London; District No. 5, J. R. Jeffries, Kirkland Lake.

The Dental Public Health Committee consists of: H. R. Swales, E. A. White, M. Jackson, C. G. Monteith, S. T. Peterkin, M. G. Boyes, D. L. Rife, R. R. Butler, all of Toronto, and K. F. Pownall of Mimico.

Those making up the Benevolent Committee are: J. A. Bothwell, Toronto; R. G. Hyde, Hagersville; and R. S. Woollatt, Toronto.

The Spring meeting of the **South Waterloo Dental Society** was held in the Iroquois Hotel on April 27. Dr. D. McG. Tanner, M.B.E., D.D.S., B.Sc.D. of the Faculty of Dentistry, University of Toronto, was guest speaker and his topic was "Oral Surgical Procedures".

Dr. G. A. Cowan of Hespeler, President, was in the chair and the speaker was introduced by Dr. Ralph Michell, Hespeler. Dr. F. J. Stapleton expressed the appreciation of the society to the speaker at the conclusion.

During the election of officers, Dr. John Dyer was elected President; Dr. C. H. Loucks, Vice-President; and Dr. F. J. Stapleton, Secretary-Treasurer. Guests were present from Kitchener and Guelph.

Two **National Research Council** scholarships for dental research have been awarded to Toronto and Montreal dentists.

The Council announced that the scholarships, worth \$3,000 each, have been given to Drs. Ernest Maarten Madlener of Toronto and Michael Weiss of Montreal.

Dr. Madlener, a University of Toronto graduate, will use his scholarship in the dental research division at the University's Faculty of Dentistry.

"It is my proud prerogative to confer on behalf of the Canadian Dental Association an Honorary Membership on Dr. Harold Keith Box . . . my former teacher and long-time faculty confrere at the University of Toronto." With these words Dr. P. G. Anderson, President of the Canadian Dental Association, presented an honorary membership to Dr. Harold Keith Box.

On the advice of his physician, Dr. Box was unable to attend the annual meeting but the honorary membership was accepted on his behalf by his son, Dr. Keith Box.

Following the presentation of the honorary membership Dr. Box was presented with his portrait, the work of Mr. Archibald Barnes. This portrait was commissioned by a group of close associates of Dr. Box who, after forming a committee to develop plans to honour Dr. Box on the occasion of his retirement after 41 years of distinguished service to the Faculty of Dentistry in the University of Toronto, developed the Harold Keith Box Testimonial Fund.

Dr. Anderson completed his remarks by stating that "His international reputation has brought honour to dentistry and to Canada, and while we may recognize our indebtedness to him today, primarily for his brilliant accomplishments in the field of Pathological Research, he merits our recognition for his ability as an author, a teacher, a gifted clinician, or even as an artist or a philosopher."

The 5th meeting of the **Sudbury and District Dental Society** for 1955 was held on Thursday, May 12.

Dr. J. Hollinger, past secretary-treasurer, was presented with a gift in token of his past work with the Sudbury and District Dental Society. Dr. Hollinger will practice dentistry in Smiths Falls, Ontario. Dr. Pierre Chalifoux was elected as the new secretary-treasurer.

The guest clinician and speaker was Dr. M. Mehta, of New Delhi, India. Dr. Mehta is a graduate student of the University of Toronto. He is furthering his studies under the auspices of the Colombo Plan.

Dr. Mehta discussed the latest clinical techniques on periodontics now taught at the University of Toronto. He then continued with an interesting discourse on the present status of the dental profession in India.

The wives of the society members were invited to view two movies about India. The first film was a travelogue about the northern area of India and the second traced the development of the musical culture of India.

Dr. V. Fournier thanked the speaker.



Dr. Harold Keith Box is presented with his portrait on the occasion of his retirement from the Faculty of Dentistry, University of Toronto.

Dr. Don W. Gullett, secretary of the Canadian Dental Association, and Dr. P. G. Anderson, president of the Canadian Dental Association, were guests of the **Sudbury and District Dental Society** on April 2, 1955.

Invitations were extended to all members of the Northern Ontario Dental Association to attend the meeting. The number of out of town members were as follows: Sault Ste. Marie 3, North Bay 2, Powassan 1, and Timmins 2.

In the afternoon a symposium was held concerning the Canadian Dental Association in all its aspects. Dr. H. Donnelly chaired the meeting with Doctors Gullett and Anderson answering the questions. The Sudbury and District Dental Society and the attending members of the Northern Ontario Dental Society were enthusiastic in their praise of this symposium. It gave the members a very comprehensive and intimate view of the Canadian Dental Association. We are grateful for the efforts of Dr. S. Sutherland and Dr. J. Hollinger for organizing the meeting.

Dr. Anderson was the main speaker at the dinner and Dr. Gullett discussed the 1954 Canadian Dental Association Economic Survey.

G. P. C.

The **Annual Dinner and Convocation** of the Canadian Section of the International College of Dentists was held at the Royal



Left to right—Harold L. Windrim, D.D.S., D.D.-P.H., F.I.C.D.; Donald W. Gullett, D.D.S., F.A.C.D., F.I.C.D. (Hon.); Percy Gordon Anderson, D.D.S., F.A.C.D., F.I.C.D.

York Hotel, Toronto on Saturday, May 14th.

On this occasion the Section was honored by a visit from the President of the College-at-Large, Dr. Wm. Sexton of Bristol, Virginia and the Secretary-General, Dr. H. O. Westerdahl. Prior to the dinner a reception and social half hour was held to give the Fellows and their Ladies an opportunity to meet our distinguished guests.

Dr. Frank Martin presented the candidates for the evening, Dr. Percy Gordon Anderson and Dr. Harold L. Windrim, briefly outlining their many achievements. Dr. C. L. Strachan gave the obligation and presented candidates with their certificate and College Key.

Dr. John Clay, in presenting Dr. Donald W. Gullett for an Honorary Fellowship in the College, outlined Dr. Gullett's many contributions to the organization of Dentistry on a National basis. The degree of Honorary Fellow of the International College of Dentists was conferred on Dr. Gullett by Dr. Wm. Sexton. Dr. Gullett has the distinction of being the first Canadian to receive this honour.

The speaker of the evening, Dr. Sexton was introduced by Dr. Dwight Coons. Dr. Sexton's address was on "The Origin and History of the College".

Dr. Harold O. Westerdahl who also addressed the meeting, told of the present development of the College throughout the world and especially referred to a new section being formed in Europe. F. M.

The annual field day of the **Grey-Bruce-Dufferin Dental Society** was held at Owen Sound on June 8, 1955 with forty-eight in

attendance, comprising dentists, dental technicians and supply men from the three counties and Toronto.

Dr. Robert Marshall of Toronto won the golf tournament and other golf prizes went to Dr. David MacDonald and Roy McTavish of Toronto and Dr. Kennedy of Mount Forest. E. W. S.

The winter activities of **The Hamilton Dental Association** began on January 8th, 1955, with a dinner-dance at Fischers Hotel.

At the regular meeting on January 13th Drs. D. S. Moore, D. L. Anderson, A. H. Leckie, L. J. Easter and W. D. Feasby, Moderator, presided at a panel discussion on "Clinical Dentistry as related to Preventive Periodontia".

On February 10th Dr. M. E. Lucyk gave a very complete discussion on Endodontics.

On February 15th The Association members were invited to join the Hamilton Academy of Medicine to hear a panel discussion on Estate Planning.

On March 10th Dr. H. E. Faust gave an afternoon and evening clinic on "Inlays and Anterior Bridge Abutments".

The final meeting was held on April 14th at which time Dr. G. M. Morrow was elected the new President. A programme of movies followed.

The Telephone extension course was another monthly feature of the Association.

J. F. K.

The April meeting of the **Kingston Dental Society** was held in conjunction with the **Watertown Dental Society** in Morrison's Lounge, Kingston.

The speaker was Dr. R. Brough of Syracuse, N.Y., who is a graduate of Tufts Dental College, Boston. He addressed the afternoon and evening sessions on "Economics and Office Management".

Dr. S. H. Watson, President of the host society, introduced the guests during the dinner. Over forty dentists were present, including seventeen from Watertown and others from Ottawa, Trenton, Picton, Syracuse, Brockville and Sharbot Lake.

The speaker was introduced by Dr. E. B. Sparks and thanked by Dr. J. C. Broom. The excellent instruction given by Dr. Brough was greatly appreciated.

General News

Formation of a dental program as a permanent part of the activities of the **World Health Organization** is scheduled to begin on July 1 under the direction of Dr. John W. Knutson, chief dental officer of the U.S. Public Health Service. Dr. Knutson is being assigned to WHO for a six months' period it was announced by Surgeon-General Leonard A. Scheele. The launching of a dental program by WHO is the result of a long campaign waged by the Federation Dentaire Internationale. The A.D.A. also has actively supported efforts to establish a permanent dental program within the framework of the international organization. Dr. Knutson is familiar with international dental health programs. He has been active in the F.D.I., and is currently vice-president of its Public Dental Health Services Commission. He was chairman of an international group of dental consultants who met in Geneva last year under the sponsorship of WHO. Plans for the establishment of the dental program were reviewed by WHO officials at its 8th World Health Assembly held during May in Mexico City.

Affiliation of two pioneers in the field of dental medicine — the **Forsyth Dental Infirmary for Children** and the **Harvard School of Dental Medicine** — is announced by Dr. Howard M. Marjerson, Director of Forsyth, and Dr. Roy O. Greep, Dean of the School of Dental Medicine.

Forsyth was one of the first institutions in the world devoted exclusively to dentistry for children. The Harvard School of Dental Medicine was the first dental school in the United States to be established under university auspices. Through this affiliation Harvard and Forsyth will join in a new collaboration in the care of patients, the teaching of dentistry to graduate and undergraduate students, and the prosecution of research.

The affiliation of the School of Dental Medicine and the Forsyth Dental Infirmary will not affect the Forsyth School for Dental Hygienists, established in 1916, which is associated with Tufts University. There will be no change in the usual clinical services offered by Forsyth.

The affiliation promises to confer greater strength and vitality to the programs of both institutions by coordinating the service, teaching and research resources of the Harvard School of Dental Medicine and the Forsyth Dental Infirmary for Children, and will enable them to attain the greatest

effectiveness in the performance of their respective functions and to render the best possible service to the community.

Dr. S. Leonard Rosenthal, Professor of Oral Diagnosis at Temple University School of Dentistry, Philadelphia, was installed in office as president of the **American Academy of Dental Medicine** at the concluding session of its 9th annual convention held at the Hotel Park Sheraton in New York. He succeeds Dr. George F. Clarke, Boston, whose term expired with the meeting.

Dr. George G. Stewart, also of Philadelphia, was re-elected treasurer. Others named to office include Dr. William M. Greenhut, Mt. Vernon, N.Y., president-elect; Dr. Marcel B. Archambault, Montreal, Canada, vice-president; Dr. George J. Witkin, Yonkers, N.Y., secretary; and Dr. Irving Yudkoff, New York, editor of the Academy's Journal of Dental Medicine.

The public spent an estimated \$155,700,000 for dentifrices in 1954, according to figures reported in Tide magazine. The publication listed expenditures for dentifrices for the past eight years. The 1954 sum represented a 73.4 per cent increase over the amount reported for 1947 when \$89,806,000 was spent on dentifrices. Tooth pastes took by far the largest part of the consumer dollars in comparison with tooth powders and liquid dentifrices. Last year, tooth paste sales of \$145 million accounted for 93 per cent of the expenditures on dentifrices. The amount spent for liquid dentifrices was only \$200,000 in 1954 while the expenditure for tooth powders last year was \$10,500,000.

The tenth anniversary of the Newburgh-Kingston (N.Y.) fluoridation study was marked recently by a report emphatically underlining the measure's safety and effectiveness. Dr. David B. Ast, state dental director and the chief of the study, revealed that the overall reduction in the dental decay of Newburgh children, who drank fluoridated water, was 60 per cent, as compared to Kingston children, who drank fluoride-deficient water. Dr. Edward R. Schlesinger, associate director of the division of medical sciences of the state health department, reported that extensive physical examinations of the children again emphasized the safety of the measure.

Dr. Kennedy is survived by his wife, Marjorie, and one son, Warren.

Surviving Dr. Toye is his wife, Irene and three children, David, Maureen and Teddy, also his parents, Rev. and Mrs. Harold E. Toye.

Dr. McKellar leaves his widow, the former Jessie McEwen, a son, Duncan of Avonlea and two daughters, Mrs. Cliff Thompson, in Ontario and Mrs. G. D. Phenix of Carlyle.

Dr. LaRose was predeceased by his wife, the former Emma Bernier, about one year ago. He leaves his two sons Rene and Roger and two daughters Yvette and Mrs. Denis Guerin.

Surviving Dr. Holt are his wife and son who reside in Delia, Alberta. Also one brother, Dr. S. W. Holt, Lloydminster, Sask., and three sisters, Mrs. W. P. Schutte, Port Credit, Ont.; Mrs. Rus Chapin, Kelowna, B.C., and Mrs. E. Stafford, Calgary, Alta.

Dr. Taylor is survived by his widow, Sadie, and two daughters, Mrs. J. M. Barber and Mrs. J. S. Walley, both of Winnipeg, and one son, William Irwin Taylor of Toronto.

Paul Cleave — Dr. Paul Cleave passed away on May 3rd, 1955, in Winnipeg. He was 62.

Dr. Cleave was born in Killarney, Man., and resided in Neepawa for 33 years, where he was prominent in civic and professional circles. He was on the town council for 23 years, five of them as Mayor. He was interested in hospital activities, both local and provincial, being on the Manitoba Hospital Board for several years. He was prominent in Masonic circles and an elder of the United Church while in Neepawa, and during the last three years, while in Winnipeg, held the duties in Deer Lodge United Church.

In dental circles he was one of the rural representatives on the Board of Directors of the Manitoba Dental Association for ten years and was President of the Board for one term.

Dr. Cleave is survived by his widow, Gay, and a daughter, Mrs. E. Gorick.

Joseph Wallace MacQueen — Dr. Joseph Wallace MacQueen passed away on May 5th in Vancouver. He was 88.

Born in Alma County, Ontario, Dr. MacQueen began practising dentistry in Edmonton. Three years later he moved his practice to Wainwright and then to Calgary. In 1922 he returned to Edmonton where he practised until his retirement in 1945.

Dr. MacQueen was active in Knox Presbyterian Church in Edmonton. In 1951 he moved to Vancouver where he had resided until his death.

Surviving Dr. MacQueen are his son, Louis, of Burnaby, B.C., and two daughters, Mrs. Mary Bishop of New Westminster and Grace of Burnaby.

Harry Addison McIntyre — Dr. Harry Addison McIntyre of Clinton, Ontario, died on May 22nd, 1955. He was 56.

Born in Grand Valley, Ontario, Dr. McIntyre graduated from the Royal College of Dental Surgeons in 1923. He began his practice in Blyth, Ontario, moving to Clinton in 1927 where he continued his work until his death.

Dr. McIntyre was chairman of Clinton's Town Planning Board and was also Chairman of Council's Court of Revisions Committee. He was a former member of the

Clinton School Board, past master in the Masonic Order, member of the Canadian Legion, Clinton Branch No. 140, and representative of the Mayor on the Clinton Public Hospital Board. He served overseas in both wars, with the Princess Patricia's in World War I and with the R.C.D.C. in World War II. Dr. McIntyre was a past president of the Huron-Bruce Dental Society.

Dr. McIntyre leaves his widow, the former Edith Jenkins, and two daughters, Mrs. G. E. Nelson of Port Perry and Mrs. J. Zenenuik of Clinton; also a son, Dr. John McIntyre of Cornwall.

Daniel John Marten — Dr. Daniel John Marten of Toronto passed away on May 26th, 1955. He was 54.

Born in Banova, Slovakia, C.S.R., Dr. Marten received his early education from St. Gymnasium High School, Levoca, C.S.R., later attending Masaryk University Medical Faculty, University of Vienna; Charles University, Prague, where he received his M.D., and the State Institute for Dental Surgeons, Prague. Dr. Marten also attended the University of Toronto, Faculty of Dentistry, in 1952.

Dr. Marten practised in Czechoslovakia and during his seven years in Canada he practised in Saskatoon and Rosetown, Saskatchewan. He had been in Toronto since 1952.

Dr. Marten leaves his wife Anna and a son Paul Ivan.

C. Ellsworth Gibson — Dr. C. Ellsworth Gibson of Elmira died on May 19th, 1955. He was 60.

Born in Schomberg, Ontario, Dr. Gibson received his early education in Kitchener and then in 1923 graduated from the Royal College of Dental Surgeons.

Dr. Gibson was a past president of the Elmira Lions Club and was a member of the High Park Masonic Lodge, Toronto. He served in World War I, first with the 10th Royal Grenadiers and then with the Royal Air Force.

For the past nine years, Dr. Gibson served as mayor of Elmira, being returned each time by acclamation except in 1950 when he defeated his opponent.

Dr. Gibson leaves his widow, the former Hilda Fraser Small.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1956	Banff, Alberta	June 3rd—6th
1957	Winnipeg, Manitoba	June 23rd—26th

FUTURE EVENTS

<i>Date</i>	<i>Function</i>	<i>Location</i>	<i>Officer</i>	<i>Address</i>
Aug. 14-20	Federation Dentaire Internationale	Copenhagen	W. Riis Klausen	1 Alhambravej, Copenhagen V.
Sept. 9, 10, 11	Northern Ontario Dental Association	Sudbury	Dr. A. B. Sutherland	Sudbury, Ont.
Sept. 18, 19, 20	Eastern Ontario Dental Association	Ottawa	Dr. A. C. Stinson	202 Laurier Ave. Ottawa, Ont.
Oct. 14-16	Dental Alumni Assoc. Annual Homecoming	Toronto	Dr. R. C. Moore	2 Grenview Blvd. Toronto, Ont.
Oct. 18	50th Anniversary of Dental Alumni of McGill University	Montreal	Dr. Bruce Ward	1414 Drummond St. Montreal, P.Q.
Oct. 19-24	Montreal Dental Club Annual Fall Clinic	Montreal	Dr. Bruce Ward	1414 Drummond St. Montreal, P.Q.
Oct. 23-27	American Institute of Dental Medicine	Palm Springs California.	Miss Marion G. Lewis	2240 Channing Way, Berkeley 4, Cal.
Oct. 23-28	The Mexican Dental Association—Third International Dental Congress	Mexico City Mexico	Dr. German Sanchez Cordero	Asociacion Dental Mexicana, Insurgentes 257-13 Mexico 7, Mexico.
Oct. 24	Academy of Dentistry Opening Dinner	Toronto	Dr. Robt. Marshall	200 St. Clair W. Toronto
Nov. 24	Academy of Dentistry Winter Clinic	Toronto	Dr. Robt. Marshall	200 St. Clair W. Toronto

SHORT GRADUATE COURSES

<i>Date</i>	<i>Course</i>	<i>Location</i>	<i>Address</i>
Sept. 19-23	Occluso-Rehabilitation	Tufts College Dental School	Dr. Louis Alexander Cohn, Tufts College Dental School, Div. of Postgraduate Studies, 136 Harrison Ave., Boston 11, Mass.
Jan. 22	Orthodontics	Temple University	Dr. Louis Herman, Dir. of Postgraduate Studies, Temple University School of Dentistry, 3223 North Broad St. Philadelphia, Penn.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

L'importance de l'occlusion en dentisterie*

par CLAUDE BARIL, B.A., D.D.S., Montréal

INTRODUCTION

L'histoire de la dentisterie nous révèle qu'à travers les âges, les progrès furent sensibles en Dentisterie Opératoire, Couronnes et Ponts et Prothèse. Cependant, très peu de choses nous sont communiquées au sujet de l'occlusion. Angle fut le premier à établir des notions positives à ce sujet. Aujourd'hui, nous pouvons conclure à l'importance de l'occlusion en considérant les méfaits occasionnés par une occlusion traumatique: ceux-ci se retrouvent parfois au niveau du tube digestif; ces cas étant plus rares, nous nous attaquerons spécialement aux troubles périodentaires et articulaires en rapport avec la pratique générale. Nous verrons ce qu'est une occlusion normale au point de vue dentaire, tissus de support osseux et musculaires. Puis, nous attaquerons les malocclusions 1° naturelles, c'est à dire héréditaires ou prenant naissance dans l'enfance et 2° acquises: qui découlent de la "malpractice." Nous en verrons l'im-

portance et les effets pour ensuite dire un mot des corrections à y apporter.

1. DESCRIPTION

A. Occlusion Normale

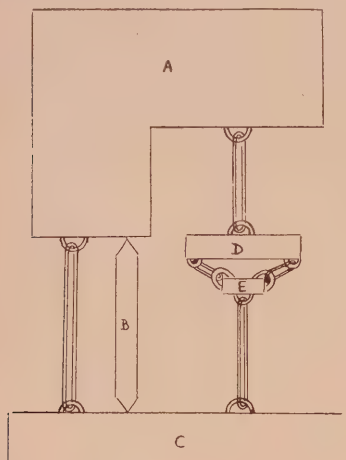
1° *Alignement des dents:* Les dents s'alignent sur les arcades des deux maxillaires pour former une demi-ellipse. Les éléments périodentaires sont soumis à deux forces: une force de traction qui favorise l'éruption d'une dent et une force de pression quand la dent est repoussée dans l'alvéole. Ces deux forces doivent être en équilibre: chacune des dents doit avoir un point de contact proximal. Quand l'éruption est complétée, les crêtes proximales doivent être au même niveau et le plan occlusal formé par l'extrémité des cuspides doit être une ligne présentant une courbe postérieure, c'est à dire au niveau de la tubérosité et nommée "courbe de Spie." Idéalement, le plan occlusal doit être parallèle au plan de Francfort et à la ligne bipapillaire. C'est ce que l'on reproduit en Prothèse. En pratique, il faut admettre comme normale une légère variante dans l'angulation des dents et du côté du plan occlusal.

2° *Relation des arcades:* Les dents

*Etude qui a valu à son auteur le deuxième prix du Mémorial de Guerre de l'Association dentaire canadienne.

du maxillaire inférieur doivent faire occlusion avec celles du haut selon un ordre bien défini. Les antérieures du haut recouvrent le tiers incisif des centrales et latérales du bas ainsi que la moitié mésiale des canines inférieures. Chacune des crêtes triangulaires des dents postérieures du haut fait son occlusion dans une fosse définie par la position de la première molaire supérieure. La crête triangulaire de la cuspidé mésio-buccale de cette dernière doit faire son occlusion dans le sillon buccal de la première molaire inférieure. Ceci emmène que chacune des embrasures formées par les dents du bas reçoit une cuspidé des dents supérieures. De plus, les dents du haut surplombent leurs antagonistes d'environ deux millimètres ⁽¹⁾. On appellera donc occlusion centrique la position dans laquelle les dents prennent le maximum de contact possible ⁽²⁾.

3° *Relation des muscles et de l'articulation*: La mandibule est le seul os mobile de la face. Les muscles et les ligaments suspendent la mandibule au crâne; ce sont eux qui lui permettent aussi tous ses mouvements. Un schéma de Brodie montre comment les muscles masticateurs commandent les mouvements et positions de la mandibule.



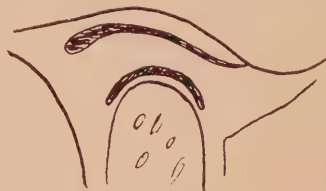
"(A) représente la tête moins le haut de la face qui ne joue aucun rôle ici et (B) la colonne vertébrale. (C) représente

les structures des épaules auxquelles s'attachent la musculature de la tête et du cou. (D) représente la mandibule et (E) l'os hyoïde. Supposons que des bandes élastiques légèrement tendues unissent les diverses parties. Il est évident que, bien que les diverses parties (A) (B) (C) (D) (E) ne puissent rester en place par elles-mêmes, l'addition d'élastiques en fait une unité stable" ⁽³⁾.

Dans l'appareil masticatoire naturel, c'est le temporal, masséter et ptérigoi-dien interne qui exercent une force vers le haut tandis que, vers le bas, la gravité, le digastrique, le mylo-hyoïdien et le génio-hyoïdien équilibrent par leur action. D'avant en arrière, c'est l'équilibre qui existe entre, d'une part, le ptérigoidien externe et, d'autre part, les fibres horizontales du temporal qui régit la position de la mandibule.

Lorsque ces muscles sont au repos et que le patient est en position verticale normale nous avons "la position de repos" de la mandibule. C'est le seul point de repère fixe dont nous disposons. Rappelons que l'hypo ou l'hypertonie musculaire peut déranger temporairement l'équilibre. Dans cette position, les dents ne sont pas en contact et nous avons entre les deux arcades un espace de un à trois millimètres que l'on nomme "le Free way space."

Lorsque les muscles éleveurs entrent en action, la mandibule tourne autour d'un axe imaginaire passant à travers la tête des deux condyles; et ceux-ci, étant dans la position physiologique la plus arrière dans la cavité glénoïde, nous avons la "relation centrique." Dans cette position, tous les éléments de l'articulation sont en équilibre et en relation normale, le ménisque servant de coussin au condyle ⁽⁴⁾.



Dans l'occlusion normale idéale, la rela-

tion centrique et l'occlusion centrique doivent correspondre. Toute différence qui existe entre les deux est anormale et peut engendrer des troubles musculaires et articulaires ⁽⁵⁾.

B. Malocclusions naturelles

Angle classifie les malocclusions naturelles comme suit:

Classe I

"La crête triangulaire de la cuspide mésio-buccale de la première molaire supérieure s'articule ou s'enlignè dans le sillon buccal de la première molaire inférieure. La pointe de la cuspide de la canine supérieure s'articule ou s'enlignè entre la canine et la première prémolaire inférieure" ⁽⁶⁾.

Dans la Classe I, nous avons une relation normale des arcades avec malocclusions individuelles de certaines dents. L'enfant développera des mauvaises habitudes telles: sucer le pouce ou plusieurs doigts; usage de mauvaises sucres sur la bouteille ou de tétines dans le bas âge, présence habituelle de la lèvre inférieure entre les dents, etc. Les mauvaises habitudes énumérées exercent une pression additionnelle anormale qui tend à déplacer les dents sur l'arcade et à influencer même le développement de cette dernière. Force nous est de dire que les extractions sans préoccupation de poser un appareil de maintien est aussi une des causes les plus fréquentes de malocclusions de Classe I ⁽⁷⁾. L'extraction favorise la migration des dents sur l'arcade et les relations changent dans l'articulé.

Classe II

"La crête triangulaire de la cuspide disto-buccale de la première molaire supérieure s'articule ou s'enlignè dans le sillon buccal de la première molaire inférieure. La pointe de la cuspide de la canine supérieure s'articule ou s'enlignè entre la latérale et la canine inférieure. L'inclinaison axiale des dents peut être normale; elle peut présenter aussi une linguo ou labio-version. Cette malocclusion sera présente d'un seul côté ou bien elle sera bilatérale" ⁽⁸⁾.



Brodie, Oppenheim et Hellman croient que cette anomalie est due à une relation distale de la mandibule par rapport au crâne. Dans certains cas de Classe II, il y a indubitablement un sous-développement antéro-postérieur du corps de la mandibule qui est responsable pour les mauvaises relations de la mandibule avec le reste du crâne. Ceci résulte d'ailleurs



en relation distalée des inférieures par rapport aux supérieures. Cependant, l'hyperdéveloppement du maxillaire supérieur entraîne des fois la même malocclusion car il permet une position trop

mésiale de la première molaire supérieure, entrant en rapport avec une mandibule normale. Ces altérations dans la croissance prendraient naissance dans la jeunesse et on en est à croire que le système endocrinien a sa grande part à jouer dans la Classe II. L'angulation de la mandibule et les autres lignes d'études retrouvées dans la radiographie crânienne n'ont rien de spécifique pour la Classe II. Seule l'étude des modèles obtenus par des empreintes nous permet de déterminer si



la malocclusion est une Classe I ou II, en regardant la position des premières molaires et des canines ⁽⁹⁾.

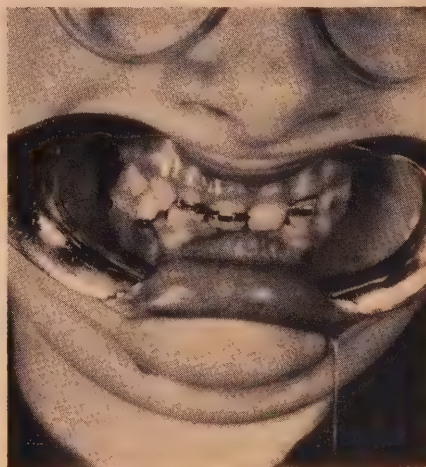
Classe III

"La crête triangulaire de la cuspide mésio-buccale de la première molaire supérieure fait son occlusion entre la première et la deuxième molaire inférieure. La pointe de la cuspide de la canine supérieure s'articule ou s'enligne entre les deux prémolaires inférieures ⁽¹⁰⁾. Cette malocclusion peut de même ne se présenter que sur un côté. Comme pour la Classe II, la position antérieure de la mandibule est due à un défaut de formation osseuse de causes encore non établies. Ceci résulte en un hyperdéveloppement antérieur de la symphyse mentionnière, du corps de la mandibule en même temps qu'un retardement dans la croissance du maxillaire supérieur. La première mo-

laire supérieure est donc en relation distale par rapport à la première molaire inférieure et il en est de même pour la canine supérieure ⁽¹¹⁾. En plus de cette variation de croissance, il est bien établi que l'angle mandibulaire change et devient plus obtus. Ceci se retrace sur toutes les radiographies crâniennes et est commun à toutes les malocclusions de Classe III.

Deep Bite—Occlusion profonde

Quand les incisives supérieures recouvrent plus que le tiers des incisives inférieures sans prendre une position avancée en conséquence, nous sommes en présence d'une "Deep Bite" que nous traduirons par "occlusion profonde" par opposition à "occlusion fermée" qui, elle, provient de travaux dentaires imparfaits ou d'abrasion mécanique ou chimique et qui représente une perte de hauteur verticale. Une "occlusion profonde" est donc une malocclusion naturelle. Nous pouvons la trouver à différents degrés, mais au stage le plus sérieux, Schweitzer la décrit comme suit: "Le patient, en relation centrique, nous laisse voir, après écartement des lèvres, ses incisives supérieures seules. Les dents inférieures sont complètement cachées. Les bords incisifs supérieurs frappent les tissus gingivaux inférieurs



produisant avec le temps un trauma à la gencive. La muqueuse palatine supérieure est inversement blessée par les dents inférieures. Le tiers gingival buccal des dents inférieures peut de même souffrir d'une telle occlusion. Seul un traitement orthodontique précoce peut parfois y remédier" (13).

Elle se retrouve la plupart du temps dans les cadres d'une même famille. Toutefois, on ne délaisse pas l'hypothèse d'une altération post-natale due à des troubles endocriniens, nutritifs, etc.

Un fait, de même, persiste; c'est que tout le dérangement se fait initialement au niveau du maxillaire supérieur; c'est la courbe de Spie qui est inversée et les incisives inférieures ne font éruption qu'en raison du fait qu'elles n'ont pas de dents antagonistes pour les arrêter. Il y a donc deux points à retenir: 1° L' "overbite" est augmenté, c'est à dire, il y a plus que le tiers incisif des inférieures de recouvert.

2° L' "overjet" n'est pas augmenté, donc, à la suite du mouvement de fermeture de la mandibule, les dents supérieures frappent le collet des dents et la gencive inférieure.

C. Malocclusions acquises

La "malpractice" produit souvent des malocclusions à des degrés plus ou moins graves. Les plus fréquentes sont: Classe I de Angle, les "Deep Bite," dents basculées, suroclusions et non-occlusions.

Salzman, après une étude de 10,000 cas d'extractions des quatre molaires permanentes, sur des sujets variant entre quinze et dix-neuf ans, écrivait: "Après la perte de la première molaire, les cas d'occlusion normale tendent à devenir des cas de Classe I" (14).

Neustadt, d'un autre côté, disait: "Il y a beaucoup trop d'occlusions profondes dues aux extractions des molaires permanentes" (14).

Je n'insisterai pas sur ces deux malocclusions que j'ai déjà décrites. Disons qu'en plus de ces deux conséquences d'extractions sans restaurations prothétiques subséquentes, nous avons les déplace-

ments proximaux avec perte des points de contact. Le plus souvent, ce mouvement prend forme d'un mouvement de rotation autour d'un axe traversant la racine de la dent dans son tiers apical. La dent est donc basculée, les crêtes marginales déplacées et les relations des dents étant altérées, les forces de la mastication d'abord souvent physiologiques deviennent pathologiques (15).

Nous avons vu de plus que la morphologie de la dent était en raison de sa fonction. Tout cuspe prenant de l'épaisseur ou toute fosse qui perd sa profondeur à la suite d'une reconstitution trop haute change la relation des arcades. L'obturation qui change la hauteur d'une morphologie dentaire empêche les autres dents d'entrer en contact puisqu'elle prend contact avant le reste de l'arcade. Ceci peut être causé par une obturation, une couronne, un pontique ou un partiel.

L'occlusion centrique est alors constituée d'un point de contact, soit sur l'obturation en question, et pour tomber en relation centrique, nous aurons une trajectoire anormale décrite par la mandibule afin d'éviter ce point de suroclusion.

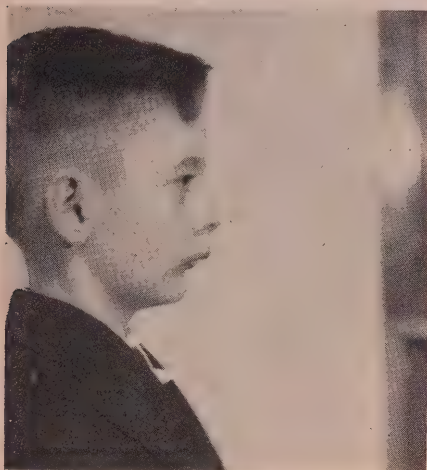
D'un autre côté, si l'obturation ne rétablit pas la hauteur morphologique de la dent, celle-ci, toujours sujette à la force de tension des fibres périodentaires, ne reçoit plus sa force de pression. Il y a donc déséquilibre qui favorisera l'éruption de la dent. Ceci fut décrit par Gotlieb: une dent est en éruption continue. Cette éruption est arrêtée quand la dent rencontre dans son éruption une force antagoniste équilibrant sa force d'éruption. Naturellement, c'est la force qui est trouvée dans la relation normale des arcades. Quand une dent n'a plus d'antagoniste, elle reprend son éruption et c'est ce qui se passe dans la non-occlusion acquise à la suite d'une mauvaise restauration.

Les points de contact non rétablis emmènent le même déséquilibre mais dans le sens horizontal. Les dents se déplacent proximale-ment du côté où elles ne sont plus appuyées.

D'un autre côté, les crêtes marginales trop hautes ou trop basses forment un

gradin qui favorise la rétention alimentaire.

Ceci est l'ensemble des malocclusions



Classe I ou II



Classe III

causées le plus fréquemment dans la pratique dentaire. Leurs effets sont variables et leur importance découle du fait qu'ils se manifestent tant au niveau esthétique et périodentaire qu'au niveau musculaire et articulaire.

2. EFFETS ET IMPORTANCE

A. Esthétique: les déformations faciales occasionnées par les classes de Angle sont très caractéristiques.

Les conséquences psychologiques, sociales, etc., de tels profils sont parfois considérables. On peut même retrouver dans certains cas des conséquences phonétiques.

B. Sur les tissus de support:

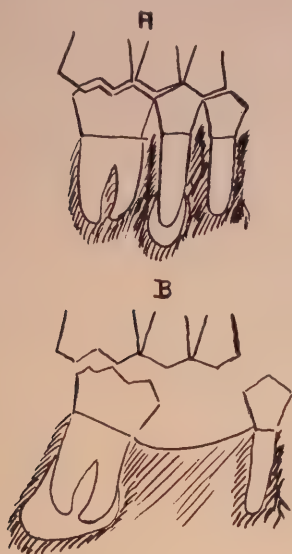
Douleur: Une patiente se présente à la clinique: - dossier no 284, femme de trente ans. Travail de dentisterie opératoire complété, il y a trois mois. Douleur non localisée, tantôt supérieure, tantôt inférieure, depuis deux semaines. C'est un ensemble de symptômes de névralgie. Nous prenons des radiographies complètes et remarquons trois espaces de membrane périodentaire élargis. Nous vérifions l'occlusion et nous trouvons trois contacts prématurés sur les dents en question. La douleur disparut deux jours après le rétablissement d'une occlusion normale.

Ceci n'est qu'une illustration de ce qui arrive tous les jours après un traitement dentaire inadéquat. Les forces de tension et de pression sont débalancées. Il y a augmentation de pression sur une dent en surocclusion car elle supporte à elle seule ce que trente-deux supportent normalement. La surcharge reçue par la couronne est transmise à l'apex. Il y a alors compression des tissus apicaux et périapicaux entre la racine et l'os alvéolaire. Ceci entraîne hémorragies, thromboses, nécrose de la membrane périodentaire et partant, de la douleur ⁽¹⁰⁾.

Hypercémentite, abcès, kystes: Cette pression transmise aux tissus périapicaux devient, à la longue et selon son intensité, pathologique. Elle engendre presque toujours une hypercémentite autour de la racine. Elle peut occasionner dans certains cas un processus inflammatoire périapical. La circulation interrompue peut occasionner localement une zone de dégénérescence qui se transmettra de proche en proche à la membrane périodentaire, au périoste, à l'os, etc., pour former, selon

la résistance offerte, un abcès, un granulôme ou un kyste ⁽¹⁷⁾.

Perte d'os traumatique: la résorption osseuse occasionnée par l'abcès se retrouve sans processus inflammatoire. C'est ce que l'on appelle la résorption traumatique; elle se rencontre quand la pression non pathologique occasionne tout



de même la migration de la racine dans l'os alvéolaire. C'est la pression du pouce ou des doigts dans une classe I de Angle, c'est celle que supporte une dent qu'un contact prématuré a labialée ou lingualée; c'est la pression d'une suroccclusion avec poussée verticale (a) ou d'une autre avec poussée oblique sur une dent sans proximales (b) ⁽¹⁸⁾.

C'est aussi la pression que supporte le cuspe qui interfère les mouvements de latéralité et de protrusion et qui tendra à lingualer ou labialer ce cuspe selon le moment de son interférence. Cette interférence se retrouve souvent dans les "occlusions profondes."

C'est enfin celle que supporte une dent recevant un crochet de prothèse partielle mal ajusté. Rappelons qu'une pression de quatre onces est suffisante pour déplacer une dent. L'ajustement de ces crochets

doit donc être très minutieux.

Mobilité: Découlant immédiatement de la perte du tissu de support, nous avons la mobilité des dents. Glickman remarque: "la perte progressive de l'os est un important facteur de la mobilité des dents. Cependant, elle peut aussi provenir de la dissociation, de la fragmentation des fibres principales de la membrane péri-dentaire associée avec l'inflammation, la dégénération et la destruction de la dite membrane par l'occlusion traumatique" ⁽¹⁹⁾. La mobilité provient donc de l'occlusion traumatique retrouvée soit dans les malocclusions naturelles, soit dans les suroccclusions provenant de quelque restauration. Nous savons que la résorption osseuse sous une pièce de prothèse est continue. Un partiel peut être très bien ajusté, mais avec le temps, les crêtes se résorbant, le crochet reçoit une surcharge qu'il transmet à la dent. C'est ce qui explique qu'après une dizaine d'années, les dents servant d'attaches de partiels sont souvent mobiles.

Erosion: une dent laissée en non-occlusion continue son éruption. Le joint énamocémentaire découvert, la dent devient plus susceptible à la carie et à l'usure mécanico-chimique gingivale, appelée érosion. L'érosion se retrouve aussi dans les cas "d'occlusion profonde" au troisième degré. Le frottement constant des surfaces buccales des dents inférieures par les antérieures supérieures, cause une usure typique; les dents deviennent plus susceptibles à l'action chimique de la bouche ⁽²⁰⁾.

Enfin, un partiel mal ajusté est instable. Cette instabilité lui permettant certains mouvements sous les forces de la mastication, le crochet reçoit la même impulsion. Il s'ensuit un frottement d'usure au collet de la dent que contourne le crochet; mêmes effets que précédemment.

Rétention alimentaire: Les cuspes pointus, les crêtes marginales inégales, les points de contact trop étroits ou non rétablis sont les quatre principaux facteurs de rétention alimentaire. Ajoutons à ces quatre points, les pontiques et les partiels mal adaptés. Coolidge prétend que:

"la rétention alimentaire entre deux dents voisines est une des causes les plus fréquentes de caries proximales, gingivites et dommages aux gencives" ⁽²¹⁾. L'individu acquiert certainement une certaine insensibilité à cette irritation quand elle débute tranquillement mais quand la quantité de nourriture devient assez importante, le seuil de résistance de l'individu étant dépassé, nous avons hyperplasie, gingivite, saignement, etc. Selon le Dr Selye, ce seuil varie d'un individu à l'autre et est en rapport avec l'état constitutionnel du patient. Si cet état est excellent, la réponse au stress prendra forme de sécrétion de cortisone qui diminue l'inflammation; dans le cas contraire, la sécrétion sera d'un autre produit de composition encore inconnue et qui donne libre jeu à l'inflammation.

Croissants traumatiques: La formation de croissants traumatiques au niveau de la gencive résulterait de la pression anormale de la membrane périodentaire. Ceci est suivi d'un mauvais drainage des capillaires gingivaux, engorgement de certains vaisseaux, conduisant à un changement notable de l'état de la gencive.

Gingivite: A la suite d'une étude clinique approfondie, Glickman rapporte qu'outre le trauma, la gingivite requiert la présence d'autres irritants locaux; la rétention alimentaire est ordinairement à leur source. Ce sont les causes directes des exudats inflammatoires et de la dégénération que l'on trouve dans la gingivite marginale. Box prétend que les micro-organismes, retenus dans les sacs périodentaires dans les lieux de rétention alimentaire ont leur action dans le début et le progrès des maladies périodentaires et gingivales. Cependant, le trauma est essentiel et il aggrave les changements gingivaux induits par les irritants locaux, comme inversement, ceux-ci accentuent la destruction associée au trauma ⁽²²⁾.

C. Fonctionnel

Du point de vue fonctionnel, les craquements ou la douleur au niveau de l'articulation ainsi que l'ouverture limitée ou

excessive de la bouche, selon le cas, sont les principaux symptômes des malocclusions.

Craquements: les craquements ont lieu chaque fois que la synchronisation entre les mouvements du ménisque et ceux de la tête du condyle est brisée et que celle-ci dépasse sous pression les bords du ménisque ⁽²³⁾. Les craquements représentent le choc qui se produit quand le condyle passe le bord postérieur du ménisque et, à la longue, c'est ce mouvement qui, par inflammation traumatique cause la douleur.

Syndrôme de Costen: En 1934, Costen s'attaqua aux troubles suivants: douleur au niveau de l'articulation temporomandibulaire, étourdissements, surdité partielle, maux de tête, etc. Son hypothèse eut une telle répercussion qu'il laissa son nom à tous ces maux que l'on désigne maintenant sous "Syndrôme de Costen." Son explication ne concorde pas avec les données anatomiques actuelles. Quand on connaît la relation du condyle avec la plaque du tympan et la trompe d'Eustache, on s'étonne un peu que Costen envisage la possibilité d'une pression directe du condyle sur ces deux points anatomiques. Il faut admettre que les troubles de l'articulation sont causes des symptômes énumérés plus haut, mais il semble plus plausible de dire avec Goodfriends, Zimmerman et Sicher que ces troubles sont transmis par l'intermédiaire des fibres de l'auriculotemporal. La capsule articulaire est innervée, les ligaments sont innervés et toute inflammation comprenant la capsule peut s'irradier dans cette innervation. Cette conception est plus sévèrement basée sur l'anatomie et c'est celle-là que nous adoptons ⁽⁴⁾.

Occlusion fermée: C'est une perte de hauteur verticale de l'articulé à la suite d'extractions nombreuses, restaurations en non-occlusion, pièces de prothèse inadéquates, forte abrasion, enfin de tout ce qui diminue la hauteur de la couronne clinique d'une dent et partant, altère le rapport des arcades.

Une articulation fermée conduit à une dislocation de la cavité sous-méniscale

articulaire. Le passage du condyle en arrière du disque entrave l'ouverture de la mandibule. Le condyle se retrouve coincé entre le ménisque et la paroi postérieure de la cavité articulaire. La dégénération se propage au condyle, à l'éminence articulaire, au disque et à la capsule et c'est ce qui explique la douleur à l'articulation ⁽²⁵⁾. Parfois, la douleur semble musculaire. Elle s'explique par le fait que le patient fermant la bouche plus profondément que normalement, les muscles sont dans un état de contraction continue. Il s'en suit un spasme musculaire douloureux.

Mouvements anormaux du condyle: Toute condition des dents qui amène une sur-rotation du condyle ou une trajectoire anormale du condyle produit tôt ou tard un état pathologique. Les dents qui entrent en rapport cuspe à cuspe offrent moins de stabilité que celles qui ont un rapport normal. Il en est de même pour une bouche à nombreuses restaurations sans morphologie. Le système articulaire doit se fixer seul, n'ayant plus le rapport "cuspe-fosse" pour le stabiliser. Un contact prématuré en centrique ou l'interférence d'un cuspe ou une suroccclusion unilatérale forcera le condyle dans une position centrique inhabituelle ou dans une trajectoire irrégulière. La pathologie qui en découle dépend de l'importance du changement apporté ainsi que de la période de durée. Le condyle se trouve à exercer une pression anormale sur les tissus périarticulaires. Il force même une extension anormale de certains ligaments et muscles et peut même maintenir ces extensions. C'est cet ensemble d'anormalités qui crée une pathologie.

III Correction

Trois moyens conservateurs s'offrent à nous pour remédier à cet état de chose.

Orthodontie: la plupart des malocclusions naturelles peuvent être corrigées avec avantage par les techniques de l'orthodontie. On travaille même actuellement sur certaines notions préventives d'endocrinologie regardant les malocclusions naturelles.

Meulage des dents: le deuxième moyen

est le rétablissement de l'occlusion par le meulage approprié des dents. Il se fait en trois temps:

1. Meulage préliminaire: qui consiste au rétablissement du niveau des crêtes marginales, de la morphologie des dents et la diminution des cuspes dont l'interférence est évidente.

2. Obtention de la centrique: au moyen d'empreintes de cire, de papier carbone, nous enlevons tous les contacts prématurés ou les suroccusions afin d'obtenir en relation centrique le plus de points de contacts possibles entre les deux arcades.

3. Latéralités: en meulant les cuspes buccaux du haut et linguaux du bas, il s'agit d'obtenir le plus de contacts possibles entre les canines et dernières molaires du côté actif en mouvement de latéralité.

Obturations adéquates: le troisième moyen à notre usage est la préparation d'obturations adéquates, rétablissant points de contacts proximaux, centriques et latéraux. Elles pourront être: obturations simples pour régulariser une dent en non-occlusion ou encore couronnes et ponts, pour élever une occlusion fermée. Dans ces derniers cas, quand le traitement après plusieurs semaines ne suffit pas à contrôler les spasmes musculaires et les douleurs qu'ils engendrent, nous pourrions injecter, à l'intérieur de la capsule articulaire des solutions sclérosantes. Ce traitement très efficace ne doit être employé qu'en dernier ressort, quand l'occlusion est bien rétablie et qu'aucun facteur externe ne réussit à contrôler ces désordres articulaires.

CONCLUSIONS

De ces quelques considérations, nous pouvons conclure:

1. Il existe naturellement une occlusion normale idéale qui doit être sauvegardée.

2. Cette occlusion met en jeu les dents pour elles-mêmes, les tissus périodentaires et les tissus musculaire et articulaires.

3. Les malocclusions naturelles peuvent causer des troubles dentaires, périodentaires et articulaires. Elles deviennent permanentes si elles ne sont pas traitées à temps.

4. Les malocclusions acquises découlent le plus souvent de la "*malpractice*"; leurs effets peuvent être très graves et leurs limites encore mal définies. Elles font tout de même foi d'un manque de conscience professionnelle.

5. Les désordres fonctionnels sont les plus sérieux.

6. Tous sont toutefois traitables par des moyens conservateurs.

7. Tout dentiste doit en conscience respecter une occlusion normale et prévenir les patients quand ils découvrent une malocclusion. On ne peut ignorer une occlusion traumatique si l'on regarde l'importance de ces effets.

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LE PREMIER MINISTRE FRATERNISE AVEC LES DENTISTES



Photographie prise au cours du Premier Congrès Dentaire Provincial, qui eut lieu aux Trois-Rivières, au début de juin. On voit de gauche à droite: L. P. Dubé, président de la Société de Stomatologie de Québec; Léon Carpentier, président de la Société Dentaire de Montréal; l'Hon. Maurice Duplessis, premier ministre de la Province de Québec; Roland Baribeau, président de la Société Dentaire des Trois-Rivières.

Réunion du Bureau des Gouverneurs de l'A.D.C. 1955

Le dentiste canadien attend toujours avec intérêt les résultats des délibérations du Bureau des Gouverneurs, qui s'assemble habituellement durant les quelques jours, qui précèdent le congrès national de l'Association dentaire canadienne. Ce congrès a lieu tous les ans dans un endroit différent du pays. Pour saisir toute la portée des décisions prises par les Gouverneurs à leurs assises annuelles, il faut se rappeler la constitution et le rouage de ce Bureau des Gouverneurs. Ce Bureau des Gouverneurs est constitué par les délégués officiels des dix provinces du Canada; chaque organisme légal provincial élit ses représentants, à raison d'un délégué par 500 membres; ainsi l'Ontario, qui compte un peu plus de 2,000 dentistes, a droit à quatre délégués; Québec, avec un peu plus de 1,000 dentistes, à deux; l'Ile-du-Prince-Edouard, avec quelques cinquante dentistes, y a droit à un représentant.

Ce groupe de délégués constitue le Bureau des Gouverneurs et ce Bureau constitue la cheville ouvrière de l'Association dentaire canadienne: aussi, toute proposition ou toute résolution n'engage l'Association que si cette décision a été approuvée par le Bureau des Gouverneurs.

Les Gouverneurs nomment, chaque année, des comités chargés de l'étude de problèmes spécifiques de la profession dentaire et ces comités, sous l'égide d'un président, doit présenter un rapport sur la question à la réunion annuelle suivante. Un Gouverneur peut être élu à la présidence d'un comité d'étude, mais on nomme généralement à ce poste un dentiste, dont le caractère, la formation ou les circonstances rendent plus apte à formuler des solutions à un problème en particulier. Les Gouverneurs, à leur réunion annuelle, prennent connaissance de ces rapports et les approuvent, après leur avoir fait subir les amendements qui s'imposent. Ces recommandations, quand elles ont été approuvées par le Bureau, engagent l'Association, en ce sens qu'elles constituent la politique de l'A.D.C., que le Comité Exécutif doit réaliser.

Cette année, vingt-quatre rapports ont été soumis aux Gouverneurs et l'étude de ces rapports a exigé trois journées entières. Les deux rapports qui ont davantage retenu notre attention furent celui du Comité des Finances et celui du Conseil d'Enseignement dentaire. Le Comité des Finances a, une fois de plus, souligné la faiblesse des revenus de l'Association en face de l'envergure de sa tâche. Ainsi, le budget de 1956 prévoit un déficit de \$18,702. Ce déficit est surtout amené par l'établissement d'un fonds de retraite pour les employés du secrétariat et par l'embauchage à temps complet du secrétaire général (qui, jusqu'à ce temps, partagerait son temps également entre l'A.D.C. et le Collège des Chirurgiens-Dentistes d'Ontario, donc recevait demi-traitement des deux organismes).

Il faut donc s'attendre à ce que la cotisation annuelle de chaque dentiste canadien à son organisation nationale soit augmentée substantiellement.

Le Conseil d'Enseignement dentaire a fait part aux Gouverneurs d'une décision qui était en préparation depuis plusieurs années.

Avec le concours pécuniaire de la Fondation Kellogg, le Conseil a organisé des cours de

pédagogie à l'intention des professeurs de nos facultés dentaires. Ces cours de pédagogie combleront en grande partie une lacune qui existe depuis toujours. En effet, dans nos facultés professionnelles, les professeurs ont toujours été des praticiens qui se sont improvisés professeurs et leur formation proprement pédagogique a toujours été pour ainsi dire nulle. Il faut dire, pour être juste, que le corps professoral de nos écoles professionnelles ont toujours été constitués de personnes naturellement douées pour l'enseignement et qu'une tradition et une expérience pédagogiques se sont développées graduellement au cours des années dans ces centres d'enseignement.

Néanmoins, le Conseil, en organisant ces cours, rend un immense service aux écoles dentaires, aux futurs dentistes et au public en général.

GERARD DE MONTIGNY

Nouvelles de l'Association

Relevé sur l'économie de l'exercice dentaire

Ve partie

Moyenne des dépenses, du nombre de patients et des honoraires

A) Dépenses d'un exercice dentaire

Le questionnaire demandait des chiffres sur les différents items des dépenses encourues dans un cabinet dentaire. Le tableau XVIII fournit ces chiffres pour le tout Canada.

Il y avait environ 4950 dentistes qui exerçaient à leur compte au Canada, en 1953 (de ce nombre, on a déduit les dentistes à salaire). Les moyennes du tableau XVIII indiquent que ces dentistes, en 1953, ont payé environ \$8,811,000 à des laboratoires et \$6,048,900 pour des fournitures dentaires.

Les dépenses de laboratoire semblent être l'item le plus considérable des déboursés d'un dentiste. Il faut réaliser, toutefois, que les dépenses de laboratoires ne constituent pas à proprement parler une dépense fixe d'un cabinet, puisque plusieurs interventions, telles les prophylaxies, les traitements d'enfants, les traitements periodontiques, la

chirurgie, ne comportent pas de frais de laboratoire.

Les fournitures dentaires tiennent le troisième rang dans les dépenses d'un cabinet dentaire.

Ces constatations relèvent des moyennes des dépenses.

Le tableau XIX groupe, par provinces, les moyennes des dépenses annuelles d'un cabinet dentaire. On note des différences considérables dans les différents items. La Colombie britannique est l'endroit où il en coûte le plus pour exercer l'art dentaire; Terre-neuve suit de près cette province. Il n'y a pas de continuité dans la moyenne des items dans toutes les provinces. La moyenne annuelle des loyers varie de \$505, en Nouvelle-Ecosse, à \$1086, en Colombie britannique. Comme on le voit dans le tableau XVI, Terre-Neuve est la seule province où un fort pourcentage de dentistes emploient des techniciens. Cette constatation a des répercussions dans le tableau XIX, où on réalise que Terre-Neuve rapporte que la moyenne des déboursés faits pour des salaires et des fournitures dentaires est la plus élevée, tandis que la moyenne des dépenses pour les laboratoires est la plus basse pour toutes les provinces.

B) Nombre de patients

Le questionnaire demandait le nombre de patients traités et le nombre des rendez-vous durant 1953. Les réponses à ces questions, en tant que moyennes par provinces, étaient plus uniformes qu'on ne le prévoyait. Le tableau XX donne ces chiffres. Les dentistes de la Saskatchewan ont traité en moyenne un plus grand nombre de personnes (1415). La moyenne des patients traités par un dentiste canadien a été de 1070, en 1953. On peut déduire que la profession dentaire canadienne (en excluant les dentistes salariés) a traité 5,296,500 personnes, ou encore, 35% de la population totale.

Dans toutes les provinces, moins trois, on

TABLEAU XVIII

Dentistes travaillant pour eux-mêmes
Moyenne des dépenses annuelles—1953

Items	Moyenne des dépenses	Pourcentage des moyennes de toutes les dépenses	Pourcentage de la moyenne des revenus bruts
Loyer.....	817	11.5	5.4
Services publics.....	243	3.4	1.6
Assurances.....	135	1.9	.9
Laboratoire.....	1780	25.0	11.9
Fournitures dentaires.....	1222	17.2	8.2
Salaires.....	1697	23.8	10.5
Dépréciation.....	504	7.1	3.2
Autres.....	722	10.1	4.7

relevé sur l'économie de l'exercice dentaire, A.D. '54.

TABLEAU XIX
Dentistes travaillant pour eux-mêmes
Moyenne des dépenses annuelles, par provinces

Item	C.B.	Alta.	Sask.	Man.	Ont.	Qué.	N.-B.	N.-E.	I.-P.-E.	T.-N.
Loyer	1086	846	664	846	722	711	707	505	829	901
Services publics	265	208	163	187	226	202	254	180	321	165
Assurances	128	90	89	68	104	149	97	138	115	255
Laboratoire	1835	1831	2225	1782	1424	1383	2118	969	1774	378
Fournitures dentaires	1516	1229	1216	863	1112	834	1397	1025	915	2130
Salaires	1897	1559	1486	1110	1386	780	1402	805	968	2512
Dépréciation	654	514	469	357	325	305	458	299	434	471
Autres	942	815	609	518	581	447	677	467	705	804
Total	8323	7092	6921	5731	5880	4811	7110	4388	6061	7616

relevé sur l'économie de l'exercice dentaire, A.D.C. '54.

a reçu les patients, en moyenne, à deux rendez-vous. La moyenne des rendez-vous par patients a été de trois, en Colombie britannique, en Ontario et dans l'Île-du-Prince-Édouard.

TABLEAU XX
Dentistes travaillant pour eux-mêmes
Moyenne du nombre des patients et des rendez-vous

Provinces	Moyenne du nombre de patients par dentiste	Moyenne du nombre de rendez-vous par dentiste	Moyenne du nombre de rendez-vous par patient
C.B.	1009	2741	3
Alta.	1176	2580	2
Sask.	1415	2767	2
Man.	1137	2712	2
Ont.	1017	2743	3
Qué.	982	2201	2
N.-B.	1108	2584	2
N.-E.	1109	2647	2
I.-P.-E.	725	2520	3
T.-N.	1212	2761	2
Canada	1070	2637	2.3

relevé sur l'économie de l'exercice dentaire, A.D.C. '54.

Le tableau XXI met en parallèle le revenu des dentistes canadiens, en 1953, et le nombre des patients et des rendez-vous. On note que la moyenne du revenu net augmente presque uniformément avec l'augmentation du nombre des rendez-vous. Toutefois, cette proportion n'est pas aussi uniforme quand on compare le revenu au nombre des patients, tout particulièrement pour les revenus élevés.

C) Moyenne des honoraires

Le questionnaire demandait le montant des honoraires chargés pour quatre genres d'interventions, à savoir: amalgame comprenant deux faces de la dent, incrustation en or comprenant deux faces, obturation en acrylique ou en silicate et un dentier complet. Les réponses furent établies en moyenne par provinces et paraissent dans

TABLEAU XXI
Dentistes travaillant pour eux-mêmes
Moyenne du nombre des rendez-vous—revenu net

Revenus Nets	Moyenne du nombre des patients	Moyenne du nombre des rendez-vous
1- 949	476	813
950- 1949	536	1123
1950- 2949	652	1377
2950- 3949	834	1619
3950- 4949	829	1955
4950- 5949	925	2301
5950- 6949	1095	2590
6950- 7949	1075	2630
7950- 8949	1076	2701
8950- 9949	1136	3035
9950-10949	1230	2955
10950-11949	1307	3370
11950-12949	1401	3257
12950-13949	1374	3525
13950-14949	1356	3436
14950-15949	1483	3870
15950-16949	1311	4168
16950-17949	1090	3673
17950-18949	1824	4489
18950-19949	1075	4515
19950-24949	1110	4094
24950-29949	1783	5323
29950 et plus	223	3150

relevé sur l'économie de l'exercice dentaire, A.D.C. '54.

le tableau XXII. Comme on le mentionnait, le mot "vide" signifie que le répondant n'a pas indiqué sa province et le mot "autre" représente les dentistes qui pratiquent au Canada, mais non dans une des provinces. Si on fait la moyenne des honoraires déclarés pour chacune des provinces et si on classe les provinces par ordre géographique, c'-à-d. de l'ouest à l'est, on note une décroissance progressive des honoraires à mesure qu'on se dirige vers l'occident. En effet, l'ordre de l'importance des honoraires est le suivant: Colombie britannique, Alberta, Saskatchewan, Manitoba, Ontario, Île-du-Prince-Édouard, Québec, Terre-Neuve, Nouvelle-Écosse, Nouveau-Brunswick.

TABLEAU XXII
Dentistes travaillant pour eux-mêmes
Moyenne des honoraires—1953

	Amalgame à deux faces	Incrustation en or à deux faces	Obturation en silicate ou plastique	Dentier complet
Vides	5.46	18.00	5.86	75.66
Autres	4.37	14.50	4.54	62.92
C.B.	5.52	18.77	5.35	70.71
Alta.	4.63	15.32	4.77	66.76
Sask.	4.03	13.38	4.12	67.10
Man.	4.60	15.01	4.55	62.62
Ont.	4.18	14.97	4.29	63.20
Qué.	4.33	14.65	4.43	59.16
N.-B.	4.00	11.87	4.38	52.50
N.-E.	3.78	11.98	3.98	54.46
I.-P.-E.	4.00	13.00	4.00	65.55
T.-N.	4.33	14.16	4.25	56.11
Moyenne pour le Canada	4.41	15.08	4.49	63.38

relevé sur l'économie de l'exercice dentaire, A.D.C. '54.

Résumé

Grâce à ce relevé, on a pu pour la première fois établir certains faits au sujet de l'économie de l'exercice dentaire au Canada. Le but de ce relevé était d'établir des statistiques précises à l'aide de réponses contenues dans un questionnaire qui avait été expédié à tous les membres, en février 1954. Ce relevé a permis à l'Association d'amasser certains autres renseignements qui lui seront d'un grand secours dans des circonstances spéciales. Les chiffres du relevé ont été compilés en moyennes. C'est pourquoi, un dentiste se tromperait grandement, si, à la lumière des statistiques contenues dans le tableau XVII, il croyait augmenter son revenu en ajoutant d'autres fauteuils et en embauchant plus de personnel dans son cabinet. Pour justifier des additions du genre, il faut qu'il y ait

une demande ou un potentiel de demandes suffisant pour des services dentaires dans la localité particulière. Si le volume dépasse les disponibilités d'un dentiste et de ses employés, il n'y a pas de doute que ce dentiste pourra accroître son revenu en augmentant le nombre de ses fauteuils ou de ses employés. De même, un dentiste ne doit pas conclure qu'en travaillant un moins grand nombre de semaines, durant l'année, (tableau XI) il aura un revenu plus considérable, puisque d'autres facteurs doivent entrer en ligne de compte. Les moyennes, il est vrai, ne donnent pas tous les renseignements sous leur vrai jour, mais elles peuvent sans nul doute, si on les étudie avec soin, fournir au praticien des données précieuses sur l'économie de l'exercice dentaire.

L'analyse du relevé, telle que publiée, se termine avec ce chapitre.

Anesthésie dentinaire

J. FILDERMAN apporte quelques solutions pratiques au problème difficile de l'anesthésie de dentine.

Carie d'un collet hyperesthésié: appliquer pendant 2 secondes 3 jets de chlorure d'éthyle; le fraisage se fera sans la moindre douleur si l'on prend soin d'utiliser une fraise bien coupante. Bien entendu, l'effet ne dure que quelques secondes et il faut à nouveau recommencer; mais en général 3 ou 4 applications suffisent.

Mise à nu de la pulpe en vue d'une déulpation: commencer par faire une entaille à l'aide d'une pointe diamanté, en évitant tout échauffement, jusqu'à la dentine; diriger à ce moment un jet prolongé de chlorure d'éthyle sur la cavité ainsi créée. Le malade ressentira brève et l'on pénètre avec une fraise ronde fine et neuve dans la chambre pulpaire (*Inform. dent.*, 27 janv. 1955).

Problèmes d'allergie en stomato-odontologie en relation avec les matériaux dentaires

par le Pr Max SPRENG (Bâle)

C'est pour moi un plaisir particulier de prendre la parole aujourd'hui au milieu de vous d'autant plus que, jusqu'en 1938, m'a été donné de participer pendant plus de 10 ans à vos congrès de façon active, par diverses conférences. Il m'a été particulièrement sympathique de pouvoir exposer pour la première fois, en 1929, la prise d'empreintes par mastication au cours des Journées dentaires franco-belges. Ce procédé, qui, par la suite a été l'objet de recherches soigneuses et de discussions approfondies, est devenu une méthode à base scientifique solide et d'application prothétique pratique, dont les résultats viennent d'être exposés cette année dans une édition augmentée de mon ouvrage.

Les résultats variés, acquis durant de longues années, par la méthode d'empreinte par mastication, ont fourni la preuve que du moins *un* des problèmes prothétiques essentiels peut être résolu avec certitude: l'efficacité masticatoire aussi grande que possible des prothèses, en évitant durablement les lésions mécaniques des tissus. La preuve en a été fournie par des excisions de fragments, pratiquées systématiquement sur la muqueuse palatine, ainsi que par les contrôles et examens cliniques postérieurs.

En considération du très grand nombre de lésions mécaniques des tissus par les prothèses dentaires, sous forme d'irritations inflammatoires chroniques avec leurs conséquences, telles que proliférations hyperplastiques du tissu conjonctif (bords flottants, fibromes lobés) et atrophies osseuses, ou altérations épithéliales atypiques, il est permis de considérer comme un succès et un progrès de pouvoir les éviter. Pour cela, il suffit d'avoir judicieusement égard aux corrélations entre la base de la prothèse et les tissus vivants, appelés à la supporter, comme aussi entre les rangées de dents artifi-

cielles et les articulations temporo-maxillaires. Grâce à ces considérations, la prothèse dentaire acquiert le fondement scientifique théorique et pratique indispensable. Et ce sont justement ces considérations qui servent de point de départ et de base à la méthode de l'empreinte par mastication. (Un exposé en langue française sur ce sujet a paru dans la "Revue belge de stomatologie", No 2, 1951, sous le titre "La prothèse dentaire envisagée du point de vue scientifique").

Ainsi, les sources d'irritations mécaniques, provoquées par des prothèses dentaires, ont passé au second plan. En revanche, des possibilités de lésions, dues aux matériaux dentaires utilisés en bouche et appelés à y séjourner longtemps, sont entrées dans la cercle des observations et recherches. Ceci, en particulier, eu égard aux possibilités de sensibilisation, et même d'allergisation directe, sans négliger, néanmoins, les problèmes de propriétés cancérogènes. En ce qui concerne la possibilité d'influences cancérogènes par des substances introduites en bouche, on peut, jusqu'à présent, seulement dire que les matériaux dentaires peuvent constituer une source d'irritation susceptible de devenir à la longue permanente pour les tissus buccaux. Cependant, il n'a pas encore été démontré clairement qu'il y aurait relation directe entre la formation d'un cancer en bouche et l'influence de matériaux dentaires. Par contre, des recherches effectuées avec différentes substances synthétiques font entrevoir la possibilité expérimentale d'influences cancérogènes. Des recherches expérimentales avec des matériaux synthétiques dentaires ne sont pas parvenues à la connaissance du rapporteur. Nos recherches sur ces questions de matériaux datent de 1938. Qu'il me soit permis d'exposer à ce sujet quelques indications, suivies de la démonstration de quelques diapositives, représentant un extrait de nombreuses observations.

Les problèmes spéciaux d'allergie en stomato-odontologie dérivent du fait que des corps étrangers, par suite de traitements dentaires du milieu buccal, sont incorporés pour longtemps dans l'organisme.

Ces corps étrangers comprennent une multitude de matériaux, organiques et inorganiques, utilisés pour l'obturation radiculaire, puis, de substances métalliques destinées à d'autres usages, telles que les alliages mercuriels, sous forme d'amalgames, ou les aciers dits inoxydables, qui sont des alliages de fer avec adjonction de molybdène, chrome, nickel et cobalt, ou encore les alliages de métaux précieux de compositions diverses. En outre, il s'agit de substances macromoléculaires organiques, telles que les caoutchoucs naturels, additionnés de colorants et d'accélérateurs de la vulcanisation et, plus récemment de résines synthétiques, surtout les acrylates, c. à d. de dérivés du verre-plexi de provenances diverses, avec adjonctions de colorants et d'accélérateurs de la polymérisation.

Comme matières obturatrices radiculaires, des corps étrangers sont introduits dans les canaux radiculaires. Par delà le canal radiculaire, elles sont en relation constante avec les tissus environnants, conjonctifs, osseux, vasculaires et nerveux, et, de là, découlent les relations d'une partie avec le tout, donc avec l'organisme. Cette voie de communication est en relation étroite avec les problèmes de possibilité d'action focale.

De même, des corps étrangers sont incorporés aux dents dans un but réparateur comme obturations ou couronnes de tout genre. Ils entrent ainsi en contact permanent avec l'organisme, peut-être par la dent elle-même, mais en tout cas par le milieu buccal, par la voie de la salive, des muqueuses ou même des terminaisons nerveuses.

D'autre part, des corps étrangers reposent, comme matériaux prothétiques, sur la muqueuse. Il en résulte des relations étroites avec les muqueuses buccales et la salive, et, dans certains circonstances, des actions se font sentir sur l'or-

ganisme ou certaines de ses parties.

Négligeons les phénomènes allergiques intéressant les muqueuses buccale et linguale, comme ils se produisent à la suite d'états allergiques de nutrition ou d'actions médicamenteuses accessoires ou encore par l'usage d'élixirs dentifrices, de pâtes dentifrices, de cosmétiques et d'autre substances. Les problèmes d'allergie stomato-odontologique proprement dite sont à rechercher dans le contact permanent de matériaux dentaires avec les tissus vivants de la bouche.

Tout d'abord, des problèmes se posent quant à l'origine et l'action de foyers dentaires, en particulier de granulomes dentaires. On prête à ces altérations tissulaires apicales la propriété de devenir des facteurs de maladies, avec actions lointaines. Pour expliquer cette propriété, on a admis l'entraînement de bactéries. On a aussi pensé à l'activité de toxines, c. à d. à l'action allergique de substances produites par l'action bactérienne au sein des foyers inflammatoires. Récemment, on a cherché une explication de l'action focale dans le cadre du système nerveux, dans le sens de la pathologie de relation, respectivement de la pathologie neurale selon Ricker et Speransky, ou d'une interprétation neuro-endocrine, conformément aux recherches de Selye et Tonutti.

Selon la première hypothèse, la processus morbide serait organisé par le système nerveux; selon la seconde, on admet que l'organisme réagit contre les excitations les plus diverses — appelées "stress"—de façon hormonale assez uniforme, dans laquelle l'hypophyse et l'écorce surrénale joueraient un rôle primordial.

Dans le cadre de ces différentes conceptions des possibilités d'action lointaine des foyers, en particulier des granulomes dentaires, la question se pose jusqu'à quel point on pourrait compter ici sur l'influence d'antigènes. En général, on admet que le granulome dentaire est de nature infectieuse d'où la possibilité de formation d'allergènes endogènes secondaires — sous forme de produits bactériens et inflammatoires.

(à suivre)

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Periodontia, etiology, diagnosis and treatment*

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A knowledge of periodontia is fundamental to all phases of dentistry, regardless of whether one is a specialist or a general practitioner. Since periodontal disease is progressive and is more prevalent among older age groups, its role in dentistry is more important than ever, because of the rapid increase in life expectancy. In adults the loss of teeth due to caries amounts to about 20%, while periodontal disease accounts for approximately 80% of dental casualties. Today it is known that periodontal disease is curable, not just controllable. Teeth can be tightened, the flow of pus can be stopped, pockets can be eliminated, bone can be regenerated, and teeth can be made so

firm that they can be utilized as abutments.

To cure periodontal disease, the cause must be eliminated. Symptomatic treatment is not enough. Furthermore, by over concentration on the elimination of the periodontal pockets, one evolves a very narrow approach which is directed at a symptom rather than the disease. The pocket, after all, is simply a manifestation of the disease, not the disease itself. Periodontal involvement is not caused by infection. This is true for acute necrotizing ulcerative gingivitis as well as for the other forms. The presence of bacteria in an area does not indicate that they are responsible for the disease. Pasteur said, "some diseases are produced by bacteria; other diseases create a favorable environment for the existence of bacteria." Periodontal disease creates a favorable site for the growth of bacteria. However, one should not minimize the importance of the ab-

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sorption of bacteria, toxins and products of inflammation from pockets. Health is basic. The goal of treatment is to promote health, not fight disease.

No single cause can produce periodontal disease; rather a combination of etiological factors is responsible for this syndrome. The results obtained by the removal of a single cause will give a sub-clinical aspect to the disease, not restore health. The disease will return as soon as another factor intervenes or the remaining causes increase in severity.

CAUSATIVE FACTORS OF PERIODONTAL DISEASE

The factors causing periodontal disease are divided into three categories: dysfunctional, irritational and systemic.

DYSFUNCTIONAL FACTORS

Overfunction. Excessive stresses may be placed on a tooth by too prominent cusp height or by the incorrect placement of an inlay. Horizontal stresses are much more damaging than vertical stresses.

Insufficient periodontal support can result from poorly calcified alveolar structure, too loosely woven bone trabeculae or insufficient alveolar bulk. The effect is a secondary traumatic occlusion.

Too powerful masticatory musculature may be present in persons who inherit weak periodontal support and have a broad well developed face, with prominent cheekbones due to massive development of the masseter and other muscles. Thus a disbalance can be present between the pressures applied on the alveolar support and the ability of the structure to withstand them.

Underfunction. Premature wear may be due to local acidity caused by gastric regurgitations, by the use of excessive citrus fruits, or by bruxism. Non-occlusion, congenital or acquired, in which one or more teeth do not make contact will induce atrophic changes in the alveolar tissues.

Abnormal Habits — Unilateral mastication. Many patients will chew on one side

of the mouth because of discomfort or impairment of function on the other side. That side of the mouth receives sufficient periodontal stimulation while the neglected side presents a loss of tissue tone and an accumulation of mucin and debris.

HABITS AS A CAUSATIVE FACTOR

Habits play an important role in the causation of periodontal disease. They are usually divided into three classes:

1. Those habits resulting from various neuroses.
2. Those which are of occupational origin.
3. Miscellaneous habits.

Some habits may stimulate tissue for a certain period of time. However, constant repetition will lead to irritation, with a lowered resistance of the supporting tissue resulting in disease. Under habit neurosis may be classified lip-biting, cheek biting, tongue-pressing, fingernail biting, pencil biting, etc. In the group of occupational habits, one can list those of the needle trades such as pin biting, thread biting, etc. Musicians may cause bone destruction with the use of certain types of reeds. Stonecutters or bricklayers who work in dust laden areas not only mill in their own occlusions, but wear down their teeth excessively, occasionally actually exposing the pulp. Various miscellaneous habits exist such as pipe biting and retention of cigarette holders in a fixed position. Women are often guilty of the incorrect use of the teeth for opening bobbie pins, separating the prongs with the upper central incisors. There are also abnormal sleeping and reading positions in which the hand or pillow causes excessive pressure against the bone or teeth.

IRRITATIONAL FACTORS

The role of irritational factors as a cause in periodontal disease is obvious.

Abnormal tooth anatomy can invite periodontal disease. Marginal ridges may not be at similar levels. The bulbous contour of some teeth may be insufficient to protect the gingival margins from in-

jury by food and debris. Even in a well constructed crown, a constant chronic irritation may exist at the gingival line because the crown has insufficient contour and does not deflect the food during mastication. Improper proximal contacts will permit irritation to the interproximal papillae. The main function of the contact point is to protect the interproximal papillae. Teeth in abnormal positions or irregular alignment may induce interferences in the circulation due to compression of the interproximal tissues.

Deposits On the Teeth. Calculary deposits, both supra-gingival and sub-gingival, *materia alba* and various mucinous plaques as well as protein pellicles may act as irritating factors in the production of periodontal disease.

The direct local effect of diet plays an important role. Many people have what may be termed a non-detergent diet. Such foods are sticky and tend to adhere to the teeth thus interfering with the self cleansing process of a healthy mouth.

Vertical Food Impaction. This condition can be caused by occlusal pressure, by various plunger cusps, or even by soft tissue which is pushed between the teeth by action of the tongue or cheeks during mastication.

Mechanical Irritants. Here are included cavity margins, overhanging fillings, improperly contoured inlays and poorly designed clasps from partial dentures, which can impinge upon and irritate the gingivae. Both smoking and alcohol in excess will lower tissue resistance and contribute to gingival inflammation.

Mouth Breathing. Inflammation of the gingival tissue can result from mouth breathing. The mucous membrane is dehydrated and the tissue becomes edematous. In cases of this type it is quite efficacious to apply a lubricant such as vaseline to coat the tissue before retiring thus preventing dehydration of the gingival tissues. In prolonged mouth breathing the posterior teeth tend to erupt and make occlusal contact while the anterior teeth remain apart.

HOME CARE

Improper toothbrushing can interfere with success from periodontal therapy. Cross brushing or rotary brushing may cause horizontal recession of the gingival tissue and abrasion of the tooth surfaces. Toothbrushing damage usually occurs on the buccal or facial surfaces of teeth. The injury is found more often on the teeth of the left side of right handed individuals and on the right side of left handed individuals.

SYSTEMIC MANIFESTATIONS

Systemic manifestations include faulty nutrition, debilitating diseases and various blood dyscrasia. Some blood dyscrasia signal their first onset in the mouth. Endocrine dysfunctions deserve deep consideration. Pituitary disorder can be an underlying factor in malocclusion, crowding of the teeth and hyperplasia of the gingiva. Hyperthyroidism with its increased metabolism can create a nutritional need beyond ordinary requirements and the increased exertion of calcium salts can result in a depletion of the alveolar bone. Pregnancy is often accompanied by marginal bleeding, red raspberry gingiva or even a generalized hyperplasia. Allergies and drug idiosyncrasies are particularly apparent in those individuals who must take dilantin to prevent epileptic seizures. Enlargement of the gingival tissue often results. The treatment is simple, consisting mainly of good oral sanitation, gingival massage, and excellent home care. It has been found in these cases that surgical intervention will produce a fine result for a short time, but without good home care, the gingival enlargement recurs.

Psychosomatic associations in the production of periodontal disease are frequent. Persons under severe tension for long periods of time may show definite disturbance of gingival tissue accompanied by a tendency to a thick ropy saliva, with decalcification and extreme wear of the teeth. Acute necrotizing ulcerative gingivitis may be associated with severe emotional stress.

CLINICAL SIGNS OF INCIPIENT PERIODONTAL DISEASE

Periodontal disease can be determined long before gross clinical manifestations are evident. Mobility of a tooth may be a sign of incipient periodontal disease. Changes in the gingival color from so-called normal should be investigated. Alteration of gingival form to an edematous glossy surface with loss of stippling indicates early disease. Roentgenographic changes in alveolar bone may be revealed early in the thickening of the periodontal space.

PROGNOSIS

Prognosis is determined by considering the following: 1—extension of the pocket, 2—alveolar bone support, 3—mobility of the teeth, 4—number of teeth remaining, 5—age of patient, 6—state of health, 7—possibility of removing etiologic factors, and 8—cooperation of the patient.

Pockets which extend into the bifurcation or trifurcation of an upper molar or the bifurcation of a premolar or lower molar usually render the prognosis unfavorable. Pockets that involve the apices of teeth, make prognosis hopeless. In cases where a lower molar presents a superficial bifurcation involvement with widely divergent roots which are well anchored in bone and not mobile, and where the patient's home care is meticulous, a gingivectomy can be performed successfully. The granulomatous tissue between the roots is removed, and the bifurcation exposed for future cleansing by a rubber tip, root canal plugger, or other suitably shaped instrument.

The amount of bone remaining, the distribution of the bone and the nature of the bone must be evaluated. In general, it may be said that at least half of the bone around the tooth root should be present if treatment is to be successful. In some cases, the septal bone is so affected that it will disappear rapidly involving the contiguous tooth. The distribution of bone alters the prognosis be-

cause of its effect on the center of rotation and the leverage.

The type of bone that surrounds teeth is of great importance. A dense bone with small medullary spaces will support a tooth better than a bone with large medullary spaces, yet it may be more inelastic and prone to effects of infection. Judgment must be employed in evaluating the type and the amount of bony support before making a prognosis.

MOBILITY

If a tooth can be moved more than 1 mm. in any direction or can be rotated or depressed in its socket, the prognosis is unfavorable. However, an exception can be made when this mobility is due to excessive pressures which can be corrected by grinding or equilibrating the dentition or a splint is available to utilize the strength of contiguous teeth.

The fewer the remaining teeth, the more unfavorable the prognosis. Not only must those few teeth carry their own share of occlusal and lateral forces but they are also required to support the load ordinarily distributed over an entire arch. A few good teeth remaining supported by dense bone and strategically located so that fixed or partial appliance can be constructed, may be returned to adequate health, provided the stress is well distributed.

AGE OF PATIENT

As a rule older patients with periodontal disease will respond to treatment better than younger patients. This is reasonable since the bone is fully formed in these older patients and probably has the ability to resist the disease for a longer time. In addition, it has taken this older patient a longer time to succumb to periodontal disease, indicating greater resistance.

A patient in good general health, improves the prognosis where infections can be traced to oral foci and meticulous attention is necessary.

The possibility of removing etiological factors has a definite bearing on the suc-

cessful termination of the treatment. Where removal of these factors is uncertain, the prognosis is poor. Some factors may have either a local or systemic background and it is sometimes difficult to evaluate just how much of the systemic background can be corrected.

Before any case is accepted for treatment, the patient must be made aware of the part he must play in the correction of this oral condition. Home care and regular maintenance visits are necessary. The toothbrushing must be done regularly and properly. Patients can aid themselves by making sure that the habits that have been corrected, remain controlled. No case can be completed successfully without the full cooperation of the patient.

TREATMENT

In treating any case of periodontal disease, a definite routine is followed. First, all supra-gingival deposits are removed with appropriate instruments. Before starting occlusal equilibration, the patient should be taught the toothbrushing procedure. He must realize that toothbrushing does much more than cleanse food particles from the teeth. Four main objectives may be obtained with the proper use of the toothbrush: 1. creation of a hard, firm protective epithelium which will resist disease, 2. stimulation of the supporting structures, 3. cleansing of the teeth and with the removal of all stain and collected material, 4. prevention of further carious lesions.

The benefits derived from proper toothbrushing are: "1. periodontal stimulation, 2. improved periodontal circulation, 3. decreased gingival bleeding, 4. improved gingival color and tone, 5. increased resistance of the gingiva to infection and trauma, 6. toughening and tightening of the epithelial collar, 7. reduction of gingival sensitiveness, 8. improved pulpal stimulation, 9. lessening of root sensitiveness, and 10. decreased deposits on the teeth."

DIET AND NUTRITION

An excess of refined carbohydrates, with deficiencies of vitamins and minerals

must be given prime consideration in the causation of dental and periodontal disorders. Today opinions are divided as to the cause of caries and periodontal disease. However, it is realized that in caries a direct action occurs on the teeth in the form of decalcification of enamel by the excessive use of citrus fruits or hard candies or by the bacterial or tissue products. Decalcification can be induced by replacement of calcium by magnesium as seen in cases of patients who either rinsed their mouths daily with milk of magnesia or who have been using a milk of magnesia dentifrice over a long period of time. A non-detergent diet is a detriment since starches adherent to the teeth by salivary enzymes and bacteria break them down to produce lactic and pyruvic acids. Nutritional deficiencies may be found in many people who have poor or faulty dietary habits such as excessive use of sugars, candies, pastries, soft drinks, etc. Others who may have an incorrect or abnormal diet are food faddists and those living in regions where proper food is not available.

Persons who are edentulous or are wearing inefficient dentures cannot eat the tough fibrous type of food which would allow gingival stimulation and a sufficient amount of minerals, vitamins and other materials required, resort to a soft, starchy non-detergent mineral and vitamin-poor diet.

STEPS IN OCCLUSAL EQUILIBRATION

An important aspect of periodontal therapy is the proper equilibration of the natural dentition. For convenience, it has been divided into various planned steps.

1. Preliminary grinding. In preliminary grinding the occlusal plane is corrected. An effort is made to improve the esthetics, to reduce excess leverages on various teeth, to reshape malposed teeth and wherever possible to reduce food impaction areas. Firm contact points throughout the mouth are essential. All plunger cusps and food impaction areas should be eliminated during this procedure. Abnormally worn teeth are reshaped by reduc-

ing their bucco-lingual diameter and by restoring their anatomy to conform with age and tissue support. Any prematurities that may occur are eliminated at this time. These prematurities can be discovered by palpation, by visual aids, by means of articulating paper and by the use of thin casting wax. In this manner one can determine and eliminate any prematurities in centric occlusion. A prematurity can usually be shown by a perforation in the wax. Placing the wax with the perforation on the study cast of the patient facilitates identification of the actual area involved. This can also be marked on the tooth with a pencil. It is at this time that the operator decides whether the cusp on this tooth is to be relieved or whether the opposing fossa is to be deepened. Should this cusp be in traumatic occlusion in any of the eccentric excursions or protrusive excursions, it should be relieved. However, should this cusp not be in traumatic occlusion in any other excursions, its opposing fossa should be deepened to eliminate the prematurity. Shortening of the lower anterior teeth should be avoided whenever possible with certain exceptions. When the lower anterior teeth have extruded beyond the occlusal plane, they are relieved and reduced as much as possible to conform to the rest of the arch. In cases of excessive over-bite the lower anterior teeth may be ground. Lower anterior teeth which have extruded may be ground. Their further extrusion can be prevented by affording the patient maximum contact in a free protrusive movement.

2—In protrusive position, the operator endeavors to obtain contact from canine to canine on the upper and lower anteriors if possible. However, neither esthetics or function should be sacrificed to obtain this result. The bulk of the equilibration in a protrusive excursion is done at the expense of the lingual surfaces of the upper anterior teeth. By this reshaping the incisal guidance is changed, thus altering the plane of the upper anterior

teeth along which the lowers will glide. In shaping these lingual surfaces one should remember to grind from the point of centric contact, but not including this point, up to and including the incisal edge.

3—In lateral excursions the buccal cusps of the upper teeth and the lingual cusps of the lower teeth may be relieved in order to obtain balanced occlusion. In the natural dentition contact with the balancing side is not as exigent as in the equilibration of artificial dentures. Balancing side prematurities which will interfere with the opposite or working side should be checked carefully. These usually may be relieved without fear of changing the vertical dimension. 4—When the various excursions are completed, the centric occlusion is rechecked and the teeth smoothed and polished.

TEMPOROMANDIBULAR JOINT DYSFUNCTIONS

No discussion of occlusal equilibration would be complete without consideration of the temporomandibular joint. It is realized today that a great many temporomandibular joint dysfunctions can be caused by occlusal abnormalities. The correction of these dysfunctions is the province of the dentist.

The value of roentgenographic interpretation for temporomandibular disturbances should be minimized. Variation in the angle of incidence of the rays or the position of the head of the patient will cause distortion and modify the reading. The reclining position is not recommended for taking temporomandibular roentgenograms since it is impossible to prevent a mandibular sag when a patient is in such a position. The clinical symptoms are most important in the determination of the diagnosis, prognosis and treatment for patients with temporomandibular joint disturbances that are caused by occlusal abnormalities.

It is necessary to differentiate between the local and the systemic types of temporomandibular disturbances. Those disturbances which are of systemic origin will be relieved by function. On arising,

the patient may have pain but after mastication the pain will gradually subside. On the other hand it has been found that those temporomandibular disturbances of local origin become more severe after function.

Temporomandibular pain is caused by the compression of the head of the condyle in the joint while clicking usually is due to excessive joint freedom. In certain cases, particularly those with a deep overbite, one may find both pain and clicking on both sides.

The mechanism of joint pain is not necessarily caused by actual nerve impingement by the head of the condyle. It can be caused by muscular spasms, edema or fatigue. The variety of symptoms can be better understood when one sees the tremendous area of referral of the branches of the several nerves to be found in the joint area.

Many clinical symptoms can lead the dentist to the correct diagnosis. Some patients will have a click in the joint on palpation. Their mandible will be very tender to backward pressure such as is utilized when trying to obtain the centric relation in certain edentulous patients. Any deviation on the opening of the mouth should be noted. Patients whose one joint may be limited will deviate to that side on opening. In many cases, a deviation is found on closure, particularly when a prematurity is present when the patient closes into a convenience centric occlusion. Opening of the mouth in excess of 45 mm. should be carefully evaluated, since it usually indicates freedom in the joints.

Sidney Reisner has divided the various joints into three categories.

1. The so-called herbivorous type of joint with a rather shallow joint cavity and shallow condylar head. This type of joint usually is accompanied by practically an end to end occlusion.

2. The carnivorous or deep overbite category in which is found a very deep, concave fossa. Probably only about 10 per cent of the population has this type

of joint. Ninety per cent of temporomandibular disturbances are found in these joints.

3. The omnivorous joint is usually accompanied by a shallow overbite.

CAUSES OF TEMPOROMANDIBULAR DISTURBANCES

1. Difference between centric relation and centric occlusion. In most people past the age of 13 a difference between the centric relation and centric occlusion may be found caused by slight prematurities in the occlusion.

2. Unopposed elongated teeth can cause temporomandibular joint disturbances. Very often an elongated upper third molar can strike the distal of a lower second molar in an oblique direction and cause a thrusting toward the opposite side of the mandible with resultant pain in that side.

3. Teeth that are out of line very often cause temporomandibular joint irritation.

4. In unilateral mastication one will find that the used side or the side that is being chewed upon will have the temporomandibular joint discomfort because of the thrust of the head of the condyle back into the fossa.

Other causes of temporomandibular joint disturbance include habits such as bruxism, hand pressing and various compressing sleeping positions.

RELIEF FROM TEMPOROMANDIBULAR DISCOMFORT

To obtain relief, the patient should be told to chew on the side opposite from the one in which the pain is present. Also establish the habit of "Lips together, teeth apart." In this way the freeway space and the rest position are recreated.

Some help can be afforded these patients by means of nutritional fortification with 500 mgs. of ascorbic acid daily to relieve the edema and about 50 mgs. of thiamin chloride daily to raise the pain threshold. In addition, 5 gms. mephensin, or other muscular relaxants can be prescribed.

Endocrine therapy, such as the injection of hydrocortisone directly into the joints, can be used in rare cases. However, extreme care and caution must be exercised in this procedure. Both physiotherapy and psychotherapy have proven valuable adjuncts to therapy.

Prolonged relief may be obtained by making centric relation and centric occlusion as nearly synonymous as possible. The extraction of unopposed teeth which cannot be properly replaced, the equilibration of the occlusion, and the correct restoration of all missing teeth may help to relieve temporomandibular joint disturbances.

CONSERVATIVE SUBGINGIVAL CURETTAGE

Conservative subgingival curettage is the procedure of choice because of the possibility of re-attachment and a return to normal gingival contour. Little loss of tissue occurs and the subgingival curettage produces slight or no discomfort. Even when surgery is anticipated it is far better to do a complete subgingival curettage previous to any surgical intervention. Should conservative subgingival curettage not solve the problem and surgery becomes necessary, the flap operation is often advised, particularly in deep pockets where cosmetics is of prime importance. The operation is basically identical to the flap operation for the surgical removal of teeth and performed as follows:

Vertical incisions are made starting at the free margin of the gingiva at each side away from the involved region. It must be emphasized that these incisions should be made over healthy bone in order to insure healing and to avoid excessive gingival recession. In some cases one vertical incision may be adequate. If a larger area is to be included, two vertical incisions are necessary. The labial and lingual gingiva are then separated in the interdental spaces by a mesial distal incision through the papillae. The flap is retracted. Complete curettage and debridement of all deposits and granula-

tous tissues is performed at this time. The tissues are then co-aptd, trimmed at the gingival margin if necessary in order to provide an esthetic contour and finally sutured into position. The use of a surgical pack is desirable both for protection and immobilization of the operated area.

Should a gingivectomy be necessary, the first step is to determine the location and depths of the pockets involved. A simple probe made from a pair of tweezers with one beak bent at right angles to the other and sharpened will serve as an excellent pocket marker and probe. The gingival tissue should then be excised to a point at or near the base of the pocket. After the overlying tissue is removed the next and most important step is to remove the diseased, granulomatous tissue from inside and around the pocket area. Sharp curettes are used to break up the granulomatous tissue in the interproximal areas. As much of this tissue as possible is removed with these instruments. Any sharp edges of bone on the labial or lingual borders of the pocket must be made smooth. Finally, small tabs of tissue which sometimes protrude from the pocket, may be removed with a small, sharp curved shears. In addition to removing the diseased tissue and planing and smoothing the root surfaces, curettes can be employed to remove the remainder of the infected periodontal membrane and smooth out the surface area. When the surgical procedure is completed, a sedative dressing or pack is applied to protect the wound from food and debris and to alleviate any post-operative pain.

ACUTE NECROTIZING ULCERATIVE GINGIVITIS

With lack of oral sanitation and a lowering of tissue resistance, acute necrotizing ulcerative gingivitis may be initiated. It must be emphasized, however, that this is not an infectious disease. Koch's postulates have never been fulfilled for this disease. Patients with acute necrotizing ulcerative gingivitis need not be isolated. This condition is most prevalent in the 19 to 30 year age group. Climatic

conditions also increase or decrease its incidence.

The symptoms of acute necrotizing ulcerative gingivitis include a foul and offensive odor together with sloughing of the interproximal papillae. It is usually of sudden onset accompanied by spontaneous bleeding, pain, and increased salivation. Some patients complain of a metallic taste, with a wedging sensation of the teeth. During the period of time that the patient has acute necrotizing ulcerative gingivitis there may be enlargement of the submaxillary and sub-mental lymph glands. (Box)

The etiology of this syndrome is well known, and can be divided into local and systemic factors. Locally the causes may be listed as:

- 1—erupting teeth (usually third molars).
- 2—poor oral sanitation found particularly prevalent in Institutions, the Armed Service, etc.
- 3—irritating influences such as smoking, excessive alcohol, calculus formation, traumatic occlusion or fillings with overhanging margins.

Systemic causes may include:

1. Physical exhaustion. Patients are found to have been working overtime, studying for examinations, etc.
2. Severe emotional tension. Men in the Armed Services under fire, college students, young executives.
3. Nutritional deficiencies. Due to the excessive stress, strain and emotional factors, patients eat improperly, and irregularly with a diet very high in carbohydrates.
4. Any metabolic disturbance, which can lower tissue resistance.

Box lists as the primary sites of involvement for the lesions of acute necrotizing ulcerative gingivitis:

1. The gingival flap over partially erupted third molars.
2. The lingual margins of interproximal gingiva, especially upper central incisors.
3. The bucco-gingival margins of upper

molars, particularly in cases where teeth are crowded.

4. Cryptic tonsils.

The secondary areas are listed by Box as:

1. Gingival tissues of teeth that are in traumatic occlusion.
2. Any gingival tissue that has a pre-existing inflammation due to any of the foregoing etiological factors, such as calculus, smoking and alcohol.
3. Periodontal pockets.

The disease is considered to be acute from 4 to 7 days and may involve a single area or a whole mouth. Extractions or any extensive surgery should *never* be attempted during this acute phase.

TREATMENT OF NECROTIZING ULCERATIVE GINGIVITIS

The treatment usually consists of treating the acute phase, eliminating the sites of the secondary involvement, and then eliminating the primary sites of involvement.

The office procedure is quite simple. The teeth should be cleaned carefully. The gingival tissues and the mucous membrane should be cleaned with 3% hydrogen peroxide in a spray bottle. With cotton pledgets, the interproximal slough is removed. Very little medication is necessary. However, should the operator desire, one of the aniline dyes may be painted on the gingival tissue. Penicillin or other antibiotics may be a useful adjunct in combatting additional infection. However, the so-called penicillin lozenges or troches should be avoided since the bacterial flora of the mouth can be changed considerably by the oral administration of penicillin.

Home care for patients with acute necrotizing ulcerative gingivitis is most important. It should consist of frequent irrigation to eliminate the interproximal slough. A bland and rather light diet is prescribed, together with the complete elimination of smoking and alcohol. Supportive vitamin therapy in the form of 500 mgs. of ascorbic acid is advisable.

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The importance of the study of occlusion to the practice of dentistry

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First Prize Essay—
War Memorial Award Competition

INTRODUCTION

The profession's view of occlusion has evolved through the years. Graber¹ in his article entitled "The Fundamentals of Occlusion" recognizes four periods in this evolution. They are: The Fictional, Hypothetical, Factual and Functional Periods.

The *Fictional* period was marked by attempts at a description of what investigators thought was the mechanism of occlusion. Accordingly, pioneers like Fuller, Clark and Imgrie talked of "gliding," "meeting" or "antagonism" of teeth. In this earliest period, a norm or standard of occlusion was lacking.

In the *Hypothetical* period Angle, Cryer, and Case established the concept of a normal or standard occlusion from which deviations could be recognized. At this time also, Simon and Hellman appreciated and taught the necessity of biometrical and anthropological considerations in a complete study of occlusion.

The *Factual* period was marked by adoption of concise terminology and the beginning of an appreciation of the dynamic and functional aspects of occlusion. Such men as Broadbent with his roentgenographic-cephalometry technique, and Hans Planer with the theory of the physiological rest position, occlusal rest, and freeway space played important roles.

The period in which we find ourselves today is the *Functional* Period. Because of advanced methods of research and refined techniques, the concept of occlusion has been greatly enlarged since the days

of Clark and Fuller. The factor which probably played the greatest role in the initiation of the Functional period was the recognition of the part the temporomandibular joint and muscle physiology play in occlusion.

Because the concept of occlusion now includes the standard norm idea, the precision of cephalometric studies, the role of the temporomandibular joint and muscle physiology, and the increased knowledge of the effects of deviation from "good occlusion," occlusion cannot be fairly considered as applying specifically to the periodontist, prosthodontist, the operative dentist, and orthodontist as isolated groups, but is in actual fact the basis of all dental studies.

It has been often stated that "occlusion is the basis for all dentistry"^{2, 3, 4, 5, 6}. Madсен⁷ states that "dentistry is occlusion." If these statements are true, it may be logically concluded that the *study* of occlusion is of utmost importance. In such a basic consideration as occlusion it is of paramount importance that our terminology be concise and accurate. In some dental literature there seems to be confusion and ambiguity in the use of such words as "articulation" and "occlusion." As Victor Sears⁸ has pointed out: "A review of the literature reveals that some writers do not even distinguish between 'occlusion,' 'articulation,' and 'relation.'"

The Committee on Nomenclature of the American Dental Association⁹ has defined *articulation* as "The arrangement of artificial teeth to conform to the requirements of the edentulous space or spaces which they are to occupy, and to adequately serve the purpose of the natural

organs which they are to replace." Dorland¹⁰ in his Medical Dictionary, using the American Dental Association as his reference, defines occlusion as "The contact of the teeth of both jaws when closed or during those excursive movements of the mandible which are essential to the function of mastication."

The profession's view of occlusion has evolved from the idea of simple interdigitation of the teeth. Today, the term occlusion implies not only the relation of the teeth to each other, but also the role and relation of the supporting tissues, the mandible and maxilla proper, the two temporomandibular joints, the nerve and vascular supply, the tongue and other indirectly related structures. These structures are collectively referred to as the stomatognathic system.^{11, 12} This broadened concept of occlusion has been the result of careful and intense work by dental investigators, utilizing such modern aids to investigation as ultra-microscopy, bioassay, roentgenology¹³, and electromyography.

The general aim of dentistry is to maintain and restore correct function of the masticatory system. Correct function signifies that the system will perform the function for which it was intended and in such a way as to place no unnecessary strain on its component parts¹⁴. It is obvious, that if we are to maintain the correct function of the masticatory system, we must recognize and understand what is normal and functional, and thus be able to distinguish the abnormal or destructive. For this reason it is essential that the basic factors contributing to a functional occlusion, and factors contributing to a malocclusion be considered. The dentist may best organize his study of occlusion by a consideration of two basic divisions:

- I. Normal occlusion of the teeth and
- II. The positions of the mandible, status of oral musculature, and the temporomandibular joint.

NORMAL OCCLUSION OF THE TEETH

While recognizing that an anatomically normal occlusion is not necessarily a well-functioning one, and that occlusion may vary considerably from the norm and still be functionally correct, it is important to know what constitutes a normal occlusion; only in this way do we have a basis for our consideration.

A definition of normal occlusion which shows an appreciation of the role of the stomatognathic system is given by R. H. W. Strang¹⁵ as "that structural composite consisting fundamentally of the teeth and jaws and characterized by a normal relationship of the so-called occlusal, inclined planes of the teeth that are individually and collectively located in architectural harmony with their basal bones and with cranial anatomy exhibit correct proximal contacting and axial positioning and have associated with their normal growth development, location and correlation of all environmental tissues and parts."

Space does not permit a complete analysis of this definition, but the following points should be noted: (a) "Structural composite" implies that occlusion is made up of several structural elements, e.g., the teeth, periodontal membrane, bone and musculature. (b) "Inclined planes"—these must be in correct association with one another. The term, "inclined plane," which was introduced by Angle, is of course a purely mechanical concept and has no status anthropologically or anatomically.¹⁶ Indeed, the dentist well knows that the cusps are not planes, but rather slopes. The "plane" concept has been retained, as it is useful in teaching and facilitates classification. (c) "Architectural harmony"—the position of the dentition is "blue-printed" at the time of conception and unless the various structural elements maintain continuous harmony with this pre-conceived position, normal occlusion cannot be considered attained even though inclined plane relationship is correct. (d) "Correct proximal con-

tacting and axial positioning." Rotated teeth which, of course, cannot make contact with those on either side at the area designated for this purpose, and teeth that are abnormally tipped or with improper axial position, prohibit a normal occlusion.¹⁷

Normal occlusion of the teeth is a delicate and complicated process and requires many years for complete growth and development. During this time a marked degree of balance and harmony is maintained in its function and component parts. A knowledge of the factors which have evolved it and are guiding it throughout its formation is necessary if one is to understand the basic influencing occlusion. These are: (a) The process of evolution, (b) the law of heredity, (c) the pre-conceived architectural plan for the denture, (d) the inherent cellular property of growth and development, (e) normal body and cellular metabolism, and (f) establishment and maintaining normal function forces.

Once these factors have been brought into play and a normal occlusion has developed, it must be maintained. Here certain inherent and environmental factors are essential for occlusal stability; these are: (a) the force emanating from the functional contact of the inclined planes of the teeth, (b) the musculature of the organ of mastication, (c) normal tissue metabolism, (d) normal tooth contact, (e) normal axial positioning of the teeth, and (f) harmonious arch form and rigidity of arch bases.

It is often asked why should one study the factors contributing to a normal occlusion? In order to properly evaluate abnormal form and function for the purpose of correction, it is essential to know the normal growth, anatomy and function of the stomatognathic system.¹⁸ It cannot be overemphasized that the result of careful observation, study and research is not of academic interest only, but also has great practical value.

As illustration of the practical importance of a knowledge of the factors con-

tributing to a normal occlusion, let us consider the application of several, keeping in mind that the primary aim of dentistry is to establish and maintain proper function of the organ of mastication.¹⁹

The Force Emanating from the Functional Contact of the Inclined Planes of the Teeth—This is one of the factors maintaining and stabilizing normal occlusion of the teeth. When opposing teeth erupt and contact each other, the inclined planes of the occlusal surfaces act as a wedge. As the teeth continue to erupt they slide along these inclined planes establishing normal occlusion. This is true when the planes which are designed to meet, actually do meet. If the wrong inclined planes meet, a malpositioning occurs. In a restorative procedure, a wrongly carved inclined plane will not only effect the occlusion of the tooth concerned, but also of the opposing tooth or teeth. Hence, accurate anatomical restoration is necessary if the dentist is to render a constructive service.²⁰

Normal Tooth Contact — Approximal contact gives teeth mutual support. If a tooth is lost, a variable collapsing of the arch results. Even if only a portion of the tooth is lost by caries or in other ways, there is a proportionate disturbance in balance and the arch is rendered correspondingly unstable.^{21, 22} In practice, it is important to make accurate anatomical restoration of proximal surfaces when repairing caries, or else a malposition of the tooth will occur, resulting in a malposition of the opposing tooth. Also, lack of contact, or an improperly placed contact predisposes to gingival conditions as well as perpetuating caries due to food impaction.

As has been illustrated, a knowledge of the factors which have evolved a normal occlusion, and those which are essential for occlusal stability are of great practical importance. However, a complete study of occlusion cannot be restricted to these factors alone. Mandibular positions, muscle status, and the role of the

temporomandibular joint are important considerations. To treat the mouth as a unit is the dentist's responsibility. He must know and appreciate the relation which associated oral parts play in occlusion.

POSITIONS OF THE MANDIBLES
STATUS OF MUSCULATURE AND THE
TEMPOROMANDIBULAR JOINT

Thompson²³ describes three basic positions of the mandible, namely: The rest position, the occlusal position (centric occlusion) and the centric position (centric relation). These positions have an intimate relation to oral musculature and the temporomandibular joint.

Centric Occlusion and Centric Relation

It has been stressed that centric occlusion is the most important oral relationship.^{24, 25} It is defined as "the position of the teeth with the jaws and the teeth at maximum intercuspation with the mandible in its centric relation."²⁶ Centric relation must be distinguished from centric occlusion, which is "the most unstrained, retruded, superiorly placed and laterally balanced anatomical and functional position of the heads of the condyles in the mandibular fossae, from which lateral jaw movements can be made with facility."²⁷ Concerning centric relation, Simpson²⁸ writes "centric relation of the mandible to the maxilla is the key to all functional positions and relations." The obvious distinction between these two terms is that centric occlusion refers to the position of the teeth, while centric relation refers to the position of the mandible.

These terms assume their rightful importance when one regards occlusion from a functional point of view. The primary aim of the dental profession in the words of Lauritzen²⁹ is to "establish and maintain proper function of this (masticatory) organ." The importance of correct centric occlusion and relation can be appreciated when we consider Riesner's³⁰ statement, "The anatomy and histology of the temporomandibular joints

definitely indicate that they are not stress-bearing areas." This means that the dental arches should take up the heavy stresses of function; and it indicates the importance of harmonizing the function of the teeth with the individual pattern of temporomandibular joint movement.³¹ This brings us to a consideration of prematurities.

Prematurities — A prematurity is any part of a tooth that will interfere with the natural movements of the condyles. Skid occurs when the position created by the prematurity cannot be retained; the mandible ricochets into a series of destructive movements culminating in an eccentric bite.³² That these eccentric or abnormal movements of the mandible are destructive is borne out by V. H. Sears³³ when he states that "though comparatively few case histories are available, routine questioning by a small number of interested dentists and etiologists leads to the belief that there are millions of patients suffering unnecessarily from maltreated condyles."

The various temporomandibular joint disturbances which may result from centric occlusion disharmonies (and thus also, from centric relation disharmonies) have been listed by Glickman³⁴ as: (a) "Pain localized to the joint or radiating to the temporal muscle region; (b) referred pain to such other regions as the occipital region, tongue, throat; (c) 'clicking' or 'knocking' or grating noises in the joint; and (d) osteoarthritis with impairment of movement."

Many people have symptoms, which we now recognize as originating in the temporomandibular joint, caused by malocclusion. Many of these symptoms are referred and are therefore misleading. Unless the dentist and the physician are familiar with these symptoms and know that as a result of malocclusion of the teeth the temporomandibular joints may be insulted and injured and cause referred symptoms; the patient may never get relief because it is a dental problem, unrecognized as such.^{35, 36}

Prematurities should be recognized early by the dentist and prompt steps taken to correct the condition. Not only do temporomandibular complications arise if this condition is not treated early in life, but the entire face may be distorted and a cross-bite may be established. Also, the mandible may be caused to close too far back giving it an appearance of deficiency, or to close forward with a resulting mandibular prominence.³⁷ The dentist must take care that he does not create a prematurity by placing a restoration "too high," and he should check each patient's bite carefully to detect prematurities, and correct them.

Prematurities and the Periodontium — Not only do prematurities affect the temporomandibular joint, but also the periodontium. During mastication, the forces delivered to and through the teeth sometimes reach 250 pounds per square inch. When there are premature contacts of the teeth during the static or dynamic ranges of occlusion, those teeth receiving the initial contact will bear the brunt of the load of mastication; this will result in the breakdown of the supporting tissues.³⁸ Stillman³⁹ considered trauma to be the causative factor for many early signs of periodontal disease which were initially described by Box⁴⁰ as follows: "Traumatic crescents, congestion of marginal gingiva, tooth mobility, recession, Stillman's clefts, absence of stippling, McCall's festoons, and distended veins in the oral mucosa."

Miller⁴¹ attributes a wide variety of clinical signs and symptoms to trauma from occlusion, some of which are: Food impaction, erosion, recession, gingival hyperplasia, migration of upper anterior teeth, formation of subgingival calculus, pericementitis, cheekbiting, etc.

According to Emslie,⁴² "The importance of occlusion in the etiology of periodontal disease is still a controversial subject." Whether trauma is considered to be a primary or secondary causative agent would seem to be a subordinate consideration; for regardless of classification,

when existing prematurities are removed and further periodontal procedures are undertaken (as scaling, and correction of faulty restorative anatomy) the health of the periodontium rapidly improves. In this respect, Glickman⁴³ states, "Alleviation of the force enables the reparative changes to predominate and restoration of the tissue in the area of injury follows." This statement assumes new importance when we consider that more teeth are lost because of periodontal disease than from caries.^{4,44}

Rest Position of the Mandible

Normally, when the teeth are not in contact during mastication, swallowing or speech, the lips are in repose and the jaws are kept apart.⁴⁵ Niswonger⁴⁷ defines rest position (physiological rest position) as "that position in which the mandible is involuntarily suspended by the reciprocal coordination of the muscles of mastication and the depressor muscles with teeth separated."

The space that exists between the teeth is called the "free-way space." Thompson⁴⁶ states that the free-way space "is established before the teeth have erupted . . . is not altered . . . by eruption of the teeth and growth of the face, and . . . has a high degree of stability even after the teeth are lost. It cannot be altered permanently by any restorative or orthodontic procedure." In addition the presence or absence of teeth does not influence the resting length of the mandibular musculature.^{49, 50}

It is necessary that the dental practitioner keep the concept of a stable rest position in mind and apply it when carrying out restorative, prosthetic or orthodontic procedures. When the free-way space is encroached upon, several undesirable conditions may result in the form of marked patient discomfort when masticating and speaking, clicking and loosening of the teeth, abnormal tooth clamping habits, and trauma to the periodontium or temporomandibular joint.⁵¹ If the mandible is carried by artificial restorations to a position of physiologic rest (thus

obliterating the free-way space) it will return to this position at the expense of the unnecessary resorption of the supporting bone.⁵² Also an unfavorable leverage on the teeth is introduced, since the clinical crown becomes too high in relation to the clinical root.⁵³

Oral Musculature—Recently much work has been done relative to the neuromuscular system and its importance in occlusion. Perry and Harris,⁵⁴ following earlier work on the subject by Moyers and Pruzansky, emphasize that the dentist must recognize that all forces in the oral cavity are produced by muscle. Their number, origin, insertion and innervation are established genetically and these are the structures most resistant to change in the entire body. Thompson⁵⁵ states "that although reference is made to neuromuscular adaptability, muscles cannot adapt themselves to permanent lengthening." The application of the foregoing considerations is that the natural anatomy of the unfilled tooth in the same and opposing arches must be carefully considered, for it is in conjunction with these inclined planes and cusps that the neuromuscular pattern has long been functioning. The placement of dental restorations which are not perfectly adapted to the existing pattern of parts and their functional movements will cause pounding of the tooth and its restoration through the action of the resisting oral musculatures during occlusion. This pounding will continue until the units are thrust aside, the functional pattern is changed, or the parts are lost. Therefore the best method of helping the patient is to restore or to maintain the normal physiology of the mouth and cooperate with the muscles rather than causing them to resist and to produce pathologic conditions.⁵⁶

It is essential for the dentist to have a basic knowledge of mandibular movement, positions and relations; the function and role of the musculature concerned; the temporomandibular joint; and a clear concept of what constitutes

a normal occlusion for the individual patient as the basis for his consideration of treatment.

Occlusion is basic in dentistry and thus its study also is basic, if we are to treat the masticatory organ with enlightenment.

CONCLUSION

The concept of occlusion has changed over the years from simply the idea of intercuspation of teeth to a science embracing the teeth, their supporting structures, the temporomandibular joint and the oral musculature—from the day in which factors of occlusion were only vaguely defined and ill-understood to this day when we appreciate the importance of such factors as normal occlusion, vertical dimension, centric relation and occlusion, traumatogenic forces, the role of the temporomandibular joint and musculature.

The progress made in research and investigation of the full scope of occlusion is not of academic interest only, but such considerations as the force emanating from the inclined planes of the teeth, normal approximating contact, premature contact, encroachment on the free-way space and the like are factors which the dentist must consider daily if he is to fulfill his role of establishing and maintaining function of the masticatory organ. By treating the mouth as a unit, the dentist rises above being a simple artisan who replaces missing teeth or parts of teeth. This service is a preventive measure and will help the patient retain his teeth, which is the highest goal of dentistry.

All too often the dentist makes the mistake of accepting the existing occlusal and proximal relations as guides to the external contour of a restoration. These may be unreliable guides and the restoration, regardless of its mechanical perfection, fails to restore normal function; beautifully carved, and polished restorations, esthetically pleasing dentures and a gross improvement of the intercuspation of the teeth only, are of little value

if they have not been constructed in harmony with good occlusion in its fullest sense. Indeed, they may maintain, aggravate and in many cases perpetuate existing malfunctions.

The only approach to a workable understanding of occlusion is to study and know the anatomy, growth and function of the stomatognathic system. Only in this way can dentistry be truly regarded as both an art and a science.

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Outline of a Theory of Periodontal Disease*

by THEODOR ROSEBURY**

Our previous studies¹, extending those of others² indicate (a) that a characteristic overgrowth of mixed indigenous bacteria occurs regularly in all common types of periodontal disease (*e.g.*, marginal or ulcerative gingivitis, periodontitis and so-called periodontosis) and (b) that certain components of this bacterial group, as a mixture, give rise experimentally to transmissible lesions that seem to be an adequate counterpart of the infective aspect of periodontal disease. Macdonald et al³ are undertaking to define this so-called fusospirochetal infection. Such clinical data as the response of periodontal diseases to antibiotic therapy⁴ support the experimental findings in indicating that infection is a significant phase, but only a phase, of the pathogenesis of these diseases. Infection and accompanying inflammation seem to be unifying features of periodontal disease⁵, whereas other characteristics appear to be diverse⁶. The present attempt to outline a theory of pathogenesis as a basis for further research postulates a complex interplay of pathogenic influences and assumes that these influences bear upon a normal (*i.e.*, ideal) pattern in which all disease and effects of disease are absent. Approximations of such a normal are known⁷. Periodontal disease is thus considered pathological, is assumed to be intrinsically induced, and is hence regarded as potentially prevent-

able. This approach is opposed to the assumption of "degeneration" and implied inevitability made by others.⁸

Fig. 1 is a scheme of the postulated "normal" pattern, envisioned as a complex equilibrium changing with time. Arrows indicate influence. In most instances the influence is presented as acting in both directions. Reading from the top: Functional stress acts directly on the teeth to induce attrition⁹, and indirectly on the supporting tissues to stimulate continuous eruption, compensating for attrition. Synchronously, apposition of cementum and rootward movement of the epithelial attachment maintain anatomical and functional harmony in root and gingival areas¹⁰. This portion of the normal complex influences and is influenced by the interdigitation of cusps and their relation to functional stresses transmitted through the tooth. Stresses other than vertical are promoted by the unworn cusps of young teeth during functional and mandibular movements. Such stresses are presumably absorbed physiologically by relatively resilient young periodontal membrane and relatively plastic bone. With ageing, as cusps are lost through attrition, lateral stresses diminish, compensating for assumed losses of periodontal resiliency and bony plasticity. These factors in turn influence what is termed periodontal cushioning of the teeth, or the integrated capacity of the periodontium to absorb and react to stress. The remaining items in this figure are included in an attempt to complete the pattern in terms of ageing. They are postulated as the end results of the physiological ageing process, it being assumed that all 32 teeth persist without disease.

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PHYSIOLOGICAL MATURATION AND AGEING OF THE PERIODONTIUM

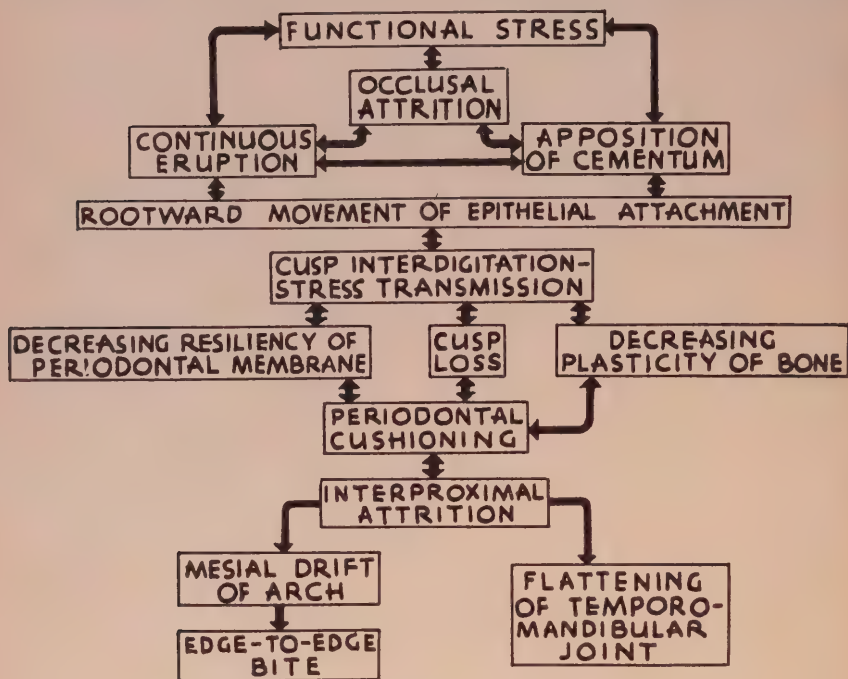


Figure 1

In fig. 2, the normal pattern—the preceding figure—is placed near the center, and the diagram attempts to indicate the pathological influences that bear upon and alter the normal course of events. It may be noted as an initial generalization that among the influences figured as bearing on the normal center the principal group that is regarded as reversible (*i.e.*, in which the arrow points both ways) is the block of factors below and to the right—commonly included among so-called “local” or environmental phenomena in periodontal disease¹¹. Of these, food retention is in turn influenced by the character of food ingested. The intended implication of the L-shaped double arrow

connecting this block with the normal center is that while such phenomena operate among others to influence the normal adversely, they are in turn influenced so as to lie, presumably invariably, in the path of pathogenesis. This path, suggested here and amplified in another figure, is conceived to involve fusospirochetal infection which, in addition to a more direct influence to be noted later, re-enters the cycle at the three points shown.

The horizontal block of factors at the top of this figure includes in outline the principal so-called systemic phenomena in periodontal disease¹²: nutritional or hormonal upsets and intoxications, and exo-

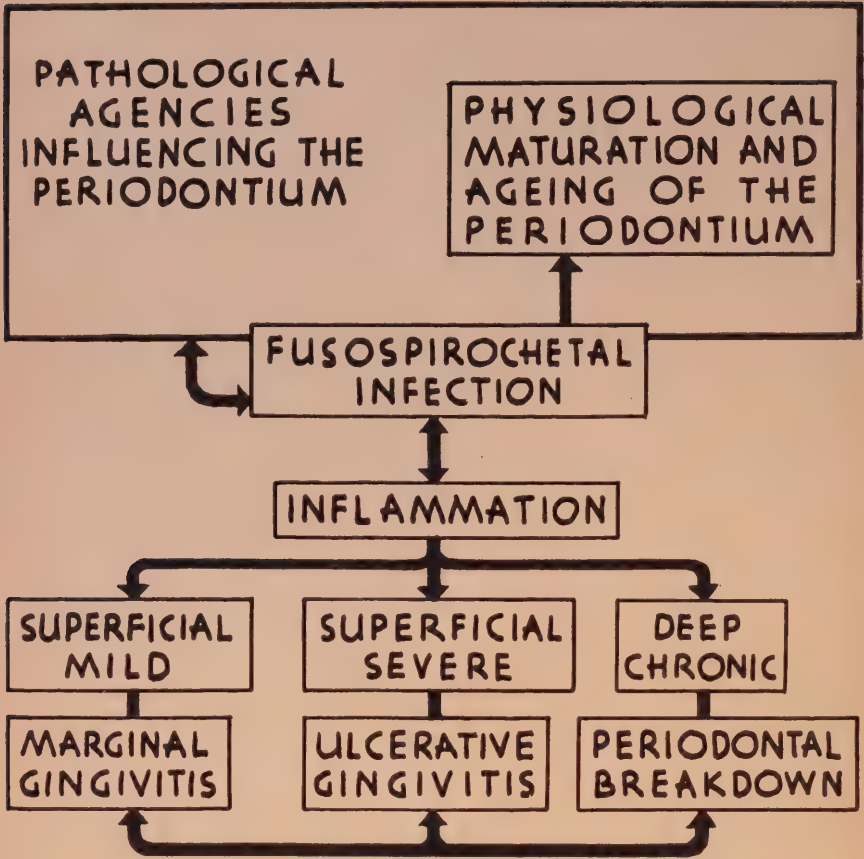


Figure 3

tors comprises caries and its sequelae, leading to tooth loss or damage, which directly affects the normal center and also lies in mutual relation to faulty restorations, which themselves may influence the normal center either directly or indirectly via the block of local factors below. Thus caries is postulated as a factor in periodontal disease, and the chart could logically be extended by incorporating in it the manifold factors in caries.

In fig. 3 both preceding charts are represented, one within the other, with fusospirochetal infection repeated to suggest that it is the gateway to the consequences of the cycle, the forms of periodontal disease. It may be emphasized that this formulation is not intended to imply that fusospirochetal infection is the "cause" of periodontal disease, but only that it is one essential link in a complex chain of phenomena. As indicated more fully in the previous figure,

fusospirochetal infection is shown as influencing the normal and as both influencing and being influenced by the pathological complex. In turn the infection leads to (and is evidently stimulated further by) inflammation, which is also postulated as an invariable characteristic of periodontal disease. The inflammatory changes and their sequelae, varying in location, severity and chronicity, constitute periodontal disease, here subdivided into three major categories which are in turn interrelated. It is suggested that the various forms of periodontal disease all proceed through a characteristic mixed infection which may differ quantitatively, hence in intensity, in relation to varied combinations of underlying agencies. While infection and inflammation are

looked upon as invariable phenomena, according to this view neither is ever primary or causative in any simple sense. In fact, no isolated "causes" and no simple cause-and-effect relationships are postulated. It is suggested that both "local" and "systemic" phenomena are always concerned in varying combinations, and that no single component of the whole scheme can be assigned unique or preponderating significance.

This outline is offered as a synthesis of known data which may help to unify a complex subject without oversimplifying it. Further research may be expected to result in modification of the theory or the development of a more satisfactory theory.

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Health—It is a sum of money in the bank, which will support you, economically spent. But you spend foolishly and draw on the principal. This diminishes the income, and you draw the oftended and the larger drafts until you become bankrupt. Overeating, overworking, every imprudence is a draft on life which health cashes and charges at a thousand per cent interest. Every abuse of health hastens death.

F. G. Welch, M.D.

ABSTRACTS



Efficient cavity preparation utilizing increased speeds.

by LEM V. SWEET, D.D.S., South Gate, California.

North-West Dentistry, May 1955.

The introduction of high speeds, diamond instruments and carbide burs in operative procedures has provided a very efficient method for the rapid removal of tooth enamel and dentine. Through this new procedure, efficiency in cavity preparation may be increased while the time factor is reduced. A combination of light pressure, high speeds, and the use of coolants greatly reduces trauma incident to operative procedures. These are important factors in relieving nervous tension for both the patient and the operator.

In the final analysis, success in the clinical application of modern instruments and increased speeds is dependent on the operator's knowledge of the mechanical and physiological principles involved, and on his mastery of special techniques and procedures which, to some degree, change the present concepts of procedures in cavity preparation.

A technique for the preparation of a proximal-occlusal cavity is as follows:

1. Place the 9mm. wheel in the long axis of the tooth at the marginal ridge area. Placement of the disc further gingivally will cause overextension of the cut gingivally.

2. The 9mm. wheel is introduced at a slight angulation with the safe side firmly against the adjacent tooth in order to make as conservative a cut as possible, and also to remove as much of the inter-

proximal tooth structure as possible.

3. With the disc rotating at high speed, it is allowed to penetrate into the tooth at the marginal ridge area. At the same time it is gradually turned to remove additional interproximal bulk. During the entire cut, pressure is maintained against the angle of the adjacent tooth with the safe side of the disc to prevent any overextension of the cut.

4. The lingual cut is made similar to the buccal except that the disc is placed more in line with the contour of the lingual cusp of the adjacent bicuspid by following the contour of the lingual embrasure and conserving tooth structure at the marginal ridge area. Constant pressure of the safe side of the disc against the angle of the adjacent tooth must be maintained for the conservative cut.

5. The thin flat occlusal opening wheel is used to penetrate the enamel in the region of the central groove. By directing the wheel, both from the lingual direction and the buccal direction, the approximate occlusal outline form is obtained.

As the wheel approaches the marginal ridge area, it is directed lingually and buccally so that the edge of the disc faces the cut made by the 9mm. proximal disc.

6. The small amount of tooth structure remaining in the interproximal area is removed by the 902 modified end and side-cutting bur.

7. A No. 558 tungsten carbide fissure bur is used to establish the proximal box form, to smooth the pulpal axial wall and define the surrounding occlusal walls, and

to smooth the pupal floor of the cavity.

8. The proper direction of the buccal and lingual walls is produced by the use of a No. 15 Bin Angle chisel. By turning the instrument, the retentive box form of the proximal walls is established in the dentine.

A No. 15 gingival marginal trimmer is used to slightly undercut the gingivo-axil

line angle and define the proximal box forms of the cavity for retention.

9. By the use of the opposite No. 15 gingival margin trimmer, the cavo surface finish is placed on the enamel margin of the gingival floor.

The finish of the occlusal walls can be performed with either a fissure bur or with hand instruments.

Newburgh-Kingston caries fluorine study, No. X dental findings for 17 year old group after nine years of fluoride experience.

by ARTHUR BUSHEL, D.D.S., New York, N.Y. and
DAVID J. SMITH, D.D.S., Albany, N.Y.

The New York Journal of Dentistry, June-July, 1955.

After nine years of exposure to fluoridated water, Newburgh's 17 year old group exhibited 30 per cent less caries experience in permanent teeth than the comparable Kingston group.

The greatest benefit was observed for the permanent cuspids and bicuspid (45-51 per cent caries reduction) with lesser benefit (22 per cent) for the second permanent molars and no significant benefit for the first permanent molars.

The lack of benefit to first molars may

be explained by their exposure to caries attack for approximately two years prior to the start of fluoridation in Newburgh.

Since the Newburgh group was first exposed to fluoridated water after the calcification of the crowns of all their permanent teeth (except the third molars), the observed benefits must have accrued either in the period between calcification and eruption or posteruptively.

The existence of a topical effect is supported by the observation that the second molars, which of the teeth studied, probably obtain the least exposure to ingested water, demonstrated only moderate benefit. If the period between completion of calcification and eruption was more important for these teeth than the topical effect, it would not be expected that the second molars would exhibit such reduced benefit.

Occupational Dermatitis in Dentists

by BRIAN RUSSELL, M.D., F.R.C.P.

British Dental Journal, May 17, 1955.

Dermatitis is a greater hazard for dentists than for any of their professional colleagues. It may be due to primary irritants or to sensitising substances.

The use of fat solvents or the repeated washing of the hands, particularly in cold weather and when the relative humidity is low, may have a primary irritant effect. The frequent use of hand cream helps to prevent excessive defatting.

The commonest sensitisers are local anaesthetics particularly those applied on

the surface, and antiseptics.

Owing to its different chemical composition, lignocaine can often be used with impunity when there is sensitisation to local anaesthetics of the benzocaine group.

Patch testing is a valuable aid to the elucidation of contact eczematous dermatitis in dentists.

If it is impossible entirely to avoid the sensitising agent, the application of 2.5 per cent hydrocortisone ointment to pre-disposed sites before exposure will lessen and may even prevent the excessive (eczematous) reaction.

The Reaction of Clinically Normal Gingiva to Abrasive Injury.

by JOHN A. KOLLAR, D.D.S., FRANK M. WENTZ, D.D.S., Ph.D., BALINT ORBAN, M.D., D.D.S.

The Journal of Periodontology, April 1955.

The purpose of this investigation was to study gingival tissue changes that occur after injury by the air-abrasive spray.

The interesting feature of this experiment is the rapid healing and almost complete lack of inflammatory reaction following mechanical injury. The absence of any but the mildest inflammatory reaction can be explained possibly by the superficiality of the injury, the lack of infection and the apparently innocuous character of the crystalline aluminum oxide.

As a rule repair is considered to be the outcome of an inflammatory reaction to an injury. The described experimental findings seem to show that there are exceptions to this rule under certain special conditions. In other words, one has to conceive the possibility that repair can follow immediately after injury. This conclusion tends to draw a sharper line between the two commonly correlated processes of inflammation and repair.

Confirmation of the observation that wound closure occurs not so much by mi-

totic processes but by migration of cells from the borders of the wound, is afforded by the interesting finding that epithelial repair of the surface break was complete at about eighteen hours after injury before any increased mitotic activity was apparent. The latter was most prominent twenty-four hours after injury, but after the wound surface was well epithelialized.

1. The injury associated with the abrasive erosion is partial destruction of epithelium, damage of epithelium remnants, exposure of connective tissue, embedding of crystalline aluminum oxide in epithelium and connective tissue.

2. The inflammatory reaction associated with the injury is extremely mild, consisting of only vascular changes without a pronounced inflammatory cell infiltration.

3. Surface repair began at about twelve hours and was complete between twenty-four and forty-eight hours after injury.

4. Epithelial mitotic activity was most prominent at about twenty-four hours after injury.

5. The type of wound healing may be described as primary healing under a scab. The scab here is the blood clot impregnated with inert aluminum oxide crystals.

An Evaluation of cavity preparations in primary molars.

by EARL L. LAMPSHIRE, D.D.S., M.S.

Journal of Dentistry for Children, First Quarter 1955.

It was the purpose of this investigation to test and evaluate those principles which are already being used in cavity preparations for the Class II silver amalgam restoration in primary molars, and to suggest those principles which according to results of tests would be advantageous to be included in a cavity preparation of this type.

The results obtained indicate that

various combinations of principles employed when a Proximo-occlusal cavity is prepared in a primary molar can significantly alter the restoration's resistance to fracture. In general, whenever a principle which we tested was added, the resistance of the restoration to fracture was increased. Since every principle tested was clinically feasible and practical, it is now possible to describe and advocate a Proximo-occlusal cavity preparation for a primary molar which may be used by all dentists.

The results of this study indicate that a Proximo-occlusal silver amalgam res-

toration placed in a primary molar will withstand the stress of mastication better and less likely to fracture if the following mechanical principles are incorporated in the cavity preparation.

1. Those principles which were considered as constants throughout the study must be included. These constants are:

a. The preparation should be based entirely upon dentine, and may penetrate at least one millimeter deep in any area of a primary molar tooth without fear of exposure.

b. The buccal and lingual cavo surface angle at the proximal, should flare sufficiently to carry the margins into free cleansing areas. A 90 degree cavo surface angle is desirable.

c. The area at the buccal gingival and lingual gingival line angles of the proximal box should be gently rounded.

d. The depth of the gingival floor should be carried just below the level of the gingiva and below the contact of the approximating tooth.

e. The walls of the proximal box should converge slightly as they approach the occlusal.

2. The isthmus should be approximately

one-fourth the buccal lingual dimension of the tooth. This is referred to as a "Wide" isthmus.

3. A very important principle which should be included is a rounded pulpal floor which starts very shallow at approximately two thirds of the distance from the pulpal axial line angle to the most distal part of the preparation, and increases to full depth at the pulpal axial line angle. Full depth of the curve is equal to one-half the diameter of a No. 4 bur.

4. A rounded pulpal axial line angle which is equal to at least one-fourth the circumference of a No. 2 bur should be added.

5. Buccal axial and lingual axial side retention grooves in the proximal box from the gingival wall, occlusally to the dentin/enamel junction should be included.

6. Although the gingival retention groove which extends along the gingival wall at the gingival-axial line angle may not be as important as the other principles, it may be added. The groove shall be equal in depth to one-half the diameter of a No. 1 bur.

Root canal treatment for the acute alveolar abscess.

by MORRIS M. GLASSER, D.D.S., Fort Devens, Mass.

The New York Journal of Dentistry, June-July, 1955.

The acute alveolar abscess can be treated routinely and successfully by the general practitioner.

The use of anaesthetic-penicillin solution enhances anaesthesia of the teeth and no longer prevents the use of local anaesthetics in swollen areas.

Intra-muscular procaine penicillin can become a routine practice in the dental office where systemic involvement is present or where it may become a possibility.

Using antihistamines to prevent allergic manifestations is a valuable medical

adjunct in dental practice.

Relief of severe pain by using adequate drugs systemically parallels the use of obtundents for a "toothache" by the dentist.

The poly-antibiotic drug can completely sterilize a root canal—not apical tissues.

The tooth with an acute alveolar abscess that has been anaesthetized can be completed in three visits because mechanical preparation can be accomplished without additional tissue damage detrimental to the patient.

The sub-acute abscess does not present as much tissue damage, therefore, mechanical preparation of the canal is avoided at the first visit to prevent increase of pain.

PUBLIC RELATIONS

Humanism in Our Public Relations

There is a tendency today among our so called leading dentists to "streamline" their practices. Their program for tomorrow was set down ten days ago, and no variation or interruption is allowed for. The dentist never leaves his chair during working hours, and auxiliary help provides his every need. If not governed by humane principles this procedure will endanger our professional standing as well as our Public Relations.

Do not misunderstand me. In these busy times when pressure upon the dentist is great, it is necessary that he take advantage of every minute in order to treat the greatest number in a given time.

Let us have "streamlined" practices, but let us set aside inalterably in our daily program — one or two fifteen-minute intervals in which we can take care of emergencies and difficult situations, which trouble our patients and prospective patients. A toothache, a denture that is causing discomfort, or an elusive pain somewhere or sometimes that is causing anxiety.

One may feel that he would accomplish little in a day if he left his chair to take care of annoying interruptions such as these, but actually he would accomplish more in the end, by showing concern and interest to someone who is in trouble. Your life, work is a devotion

to healing; giving relief and comfort; restoring lost function and health in diseased mouths—but do these things with humaneness not applied only to your patient in your chair, but to all who seek your services.

A mother comes to your office with a child suffering pain from a diseased tooth, your nurse knowing your full day tells the mother—"The doctor is busy and can't see you"—the mother replies "Maybe I can come back a little later." The nurse answers—"I am sorry but I can't give you an appointment before three weeks."

Whether the dentist knows it or not such an occurrence places his human relations on a low level, and is defeating good public relations for the profession of dentistry.

It is for more humaneness we ask, particularly for the unexpected patient. Our success in reaching a harmonious balance with society depends on the degree of humaneness that each and every dentist displays as he discharges the responsibilities of his professional life.

Someone has said, "In the world of nature the organism which cannot, or does not adopt to its environment is doomed. As our modern way of life evolves and changes we will find that our profession too must adopt itself to society."

H.L.T.

EDITORIAL

The 1955 Graduate

The day which will stand out in the memories of most dentists is the one at which their scholastic endeavours culminated in the acquisition of their academic degrees. Graduation is anticipated with eagerness whether the student be freshman or senior and it signifies both attainment and commencement.

A student of the art and science of dentistry is well prepared for the professional career which awaits him. In all Canadian dental schools basic sciences and liberal arts are combined with subjects indigenous to the profession. The dental graduate should not only be able to take his place with his confreres, but because of his education and training should be able to render service in many facets of his community life.

The 1955 graduates, having so recently experienced their various convocations, now stand on the threshold of their active careers. Some will enter private practice; others will seek governmental service; some will pursue further education with research, teaching or specialization in view. Whatever be the goal of any individual graduate, his sincerity, his interest, his awareness of personal responsibility to his profession, and his desire to contribute some of his time and talent to his profession will play a vital role in the future of dentistry in Canada.

Organized dentistry requires a contributory interest of all its practitioners. It is regrettable, however, that many dentists have not, since their graduation, availed themselves of the privilege of sharing in

the efforts of their societies, neither local, provincial nor national.

It is inconceivable that a graduate of a university has nothing to share with his confreres. The field of society affairs is broad — conventions, committee and administrative work, publications, benevolence, social and recreational efforts — and gives opportunity to all regardless of individual abilities.

Those charged with the conduct of society affairs often are critical of the lack of participation of younger practitioners. Most people, however, upon entering any new organization are reluctant to promote themselves into existing offices, and would prefer to be asked to serve by one who has had longer association with the group. If the newcomer is not invited to share in the organization's affairs for an inordinate length of time he may then lose his interest in the group to the detriment of himself and other members.

The situation may be likened to a community. If a new family takes up residence on a street, it is primarily not their responsibility to make overtures to their neighbours. It is the obligation of those already resident to extend a welcome to the newcomers and invite these people to participate in the community activities.

A new graduate is much like a new neighbour. He possesses an undoubted feeling of uncertainty which almost always exists when one enters upon a new experience. Added to this the young dentist encounters multifarious problems

always attendant with the assumption of practice for the first time. The recent graduate needs the friendship, guidance, advice, and constructive suggestion of those who have experienced that which he is presently undertaking.

It is a personal belief that many young Canadian dentists are more than willing to contribute of themselves to the affairs of organized dentistry. Somebody should ask them. Growth and development of societies take place as new thoughts, new ideas and new efforts are brought to fruition. The experience and wisdom of the senior practitioners and the enthusiasm and energy of the junior can be

combined to the advantage of the society and thence the profession.

The Canadian dental profession welcomes the 1955 graduates and encourages them to participate in the local organizations, and eventually, through a broadening of their activities, share their knowledge and experiences with the profession-at-large.

"All growth depends upon activity. there is no development physically or intellectually without effort, and effort means work. Work is not a curse; it is the prerogative of intelligence, the only means to manhood, and the measure of civilization."

The Association

Highlights of The Annual Meeting

—The 1955 Convention was the largest in history. The overall registration was 1700 of which 1189 were dentists.

—Dr. R. R. McIntyre of Calgary is C.D.A. President for 1955-56 and Dr. K. M. Johnson of Winnipeg was elected President-elect.

—Honorary C. D. A. Membership was conferred upon Dr. Harold Keith Box of Toronto.

—A portrait of Dr. H. K. Box was presented and in turn presented to the University of Toronto. In addition the Board of Governors approved the establishment of a lectureship in the name of Dr. Box.

—An educational programme on organized dentistry for members was endorsed.

—Endorsed campaign for early detection of cancer.

—Instructed Executive to pursue the objective of obtaining deductibility of pension payments from taxable income.

—Recommended against incorporation of dental practices.

—Approved of provincial grants to C.D.A. being based on \$25.00 per capita.

—Adopted resolution strongly urging authorities to establish training facilities for hygienists.

—Commended the establishment of teacher training courses for dental teachers.

—Adopted requirements for the approval of dental internships.

—Recommended establishment of Dental Health Week programme in provinces which have not already done so.

—Resolved that information respecting fluoridation and other preventive measures should be presented on an informative or educational level only.

—Agreed that ethical dental laboratories should receive active support of the profession.

—Strongly recommended employment of dental hygienists and disapproval of

the principles involved in the New Zealand Dental Nurse Plan.

—Directed that the next survey of dental practice be conducted by 1959.

—Recommended implementation of plan for adequate dental treatment of welfare recipients.

—Adopted strong statement reiterating recommendation of fluoridating communal water supplies.

Ruling by Ethics Committee

In answer to a specific request by a member of the Association the following ruling has been given by the Ethics Committee:

"The Committee feels that it is appropriate to have a notice containing the name, location and phone number of the "house dentist" appear only on the main directory of the hotel lobby and/or the bedrooms of hotel guests and in no other location or type of hotel directory.

We do not consider it proper for such listings to appear in directories for use outside the particular hotel in which the dentist's services are available."

Facts on Fluoridation— 3rd Edition (60 pages est.)

A newly revised edition of this publication is ready for distribution. Single copies—free. Quantity rate—25 cents per copy. Write:

Canadian Dental Association,
234 St. George Street,
Toronto, Ontario.

Fluoridation Notes

The Metropolitan Council of Toronto voted in favour of fluoridation of the water supply on May 17 last. The population of Metropolitan Toronto is approximately 1,250,000 and includes some 13 municipalities. Immediately following the action of the Metropolitan Council one of these municipalities (Forest Hill Village) indicated legal action to stop the procedure.

Announcement has been made that Halifax's water supply will be fluoridated by the end of the present year. Equipment for fluoridation has been ordered.

Sillery, a suburb of Quebec City with a population of 12,800 has adopted fluoridation. This is the second municipality in Quebec province to adopt the measure, the other being Point Claire.

Fraudulent Fee Being Collected

"Dear Colleague:

At the beginning of this year, I heard that there existed in London an organization called the "International Dental Institute." This Institute was contacting practitioners mainly in the Spanish speaking countries and was obtaining subscriptions from them. The matter was referred to Scotland Yard and I have heard since then that this organization was fraudulent and that the persons connected with it are now believed to be in Paris. Scotland Yard is continuing its investigations in collaboration with the French Police.

I am writing to inform you of this matter and to ask you whether you could insert in your national dental journals a notice, warning practitioners not to subscribe to this organization.

Yours sincerely,

(sgd) Gerald Leatherman,
Secretary General,
International Dental Federation".

Ontario Increases Grant

At the recent Annual Meeting, May 24th-27th, of the Royal College of Dental Surgeons of Ontario it was determined to increase the per capita grant to the C. D. A. For the year 1955 the grant will be based upon \$20.00 per capita and for 1956 and following years at the rate of \$25.00 per capita. Dr. Wesley J. Dunn was engaged as Associate Secretary of the Ontario Board with duties to commence on September 1st.

New Appointments from Ontario

Dr. W. J. Laingmaid of Oshawa and Dr. M. V. J. Keenan of Sudbury were appointed as Representatives to the C.D.A. Board of Governors at the recent Ontario Board meeting. Dr. C. M. Purcell retired

as Representative. As a result of these appointments Ontario will have five representatives on the C.D.A. Board. Under the C.D.A. By-laws each province is entitled to one representative for each 500 members or major fraction thereof. Ontario now has 2,325 members.

Corrections in Statistical Data

Two errors appeared in the Annual

Statistical Data appearing on pages 307 and 308 of the May issue of the J.C.D.A.

Table II. From Ontario to Great Britain should read "0" instead of "2" as stated.

Table III. For New Brunswick should read "0" Oral Surgeons and "1" Orthodontists instead of "1" Oral Surgeon and "0" Orthodontists as stated.

Committees and Councils

Dental Education

Pursuant to numerous discussions held by the Council on Dental Education during the past few years relative to the need for a review of teaching methods and procedures, a series of conferences is contemplated for dental school instructors. At the Council meeting held earlier this year, the initial conference was scheduled for September 12-14, 1955, in Toronto. Dean A. C. Lewis, and the staff of the Ontario College of Education, have been most helpful in planning the conference and under their leadership, topics of major importance to dental teachers will be presented and discussed. An invitation has been extended to each of the Canadian dental schools, outside Ontario, to send a representative to the Toronto conference. Thereafter, the respective College of Education or Faculty at the other dental school centres will be invited to arrange a similar conference in cooperation and with the help of the Council and the Dental Faculty concerned.

In recent years the Council has given active leadership in the education of Dental hygienists and the Canadian dental schools have been urged to establish courses in Dental Hygiene. At its

last meeting, the Council adopted the principle that dental hygiene education should be restricted to dental schools. This principle is based on recognition of the following facts:

- (i) that the dental hygienist should be trained as a member of a professional team, and in association with other members of that team,
- (ii) that she should be trained in an institution associated with a university, in which courses in the required sciences are well-established and readily available;
- (iii) that she should be trained in an institution where adequate clinical facilities and patients are readily available.

In addition to adopting the principle enunciated above, the Council again urged the dental schools already established to meet their obligation in this respect.

A report from the subcommittee on the extension of the teaching facilities in Canada revealed progress in several areas. The University of Montreal announced provision of funds for new equipment; McGill University announced that they would soon occupy their new clinical quarters in the Montreal General Hospital; Toronto and Dalhousie Universities stated that progress was being made in

their respective quests for new buildings; the University of British Columbia had recommended to the government of that province that a dental consultant be appointed to survey the dental education needs of the Province.

The Council is studying admission requirements to dental schools, particularly as they affect applicants who have completed their preprofessional education in universities where there is no dental school. The objective of the study is the final preparation of a statement which will serve as a guide to Registrars of Canadian universities, Registrars of Provincial licensing boards, vocational guidance counsellors, and deans of dental schools, in their efforts to advise prospective dental students.

In collaboration with the Research Committee the Council studied the results of the survey conducted by the Research Committee on the present status of dental research in dental schools. The

Council supports the Research Committee in its decision to urge the Canadian dental schools to take advantage of the Canadian Dental Association Studentships programme for teaching and research.

Collaboration with the Hospital Dental Services Committee has resulted in the adoption of the "Requirements for the approval of Dental Internships" in hospitals. These requirements refer specifically to the training programmes provided through hospital internships.

Arising out of the reports issued by the Survey Team and from the deliberations of the Council on Dental Education from time to time, a number of projects relative to dental education present themselves for study in the future. The Council has therefore prepared a tentative long range programme with an estimate of finances required to carry out the next five years of this programme.

ROY G. ELLIS, Chairman

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions

ANDERSON, G. M. Practical orthodontics. (Original text by the late Martin Dewey). 8th ed. 1955. 702p. illus.

DILLING, W. J. and HALLAM, S. Dental materia medica, pharmacology and therapeutics. Rev. by N. V. Dilling with the assistance of E. J. Wayne, and G. L. Roberts. 4th ed. 1954. 406p.

JENSEN, J. R. A clinical manual of endodontia. 1954. 81p. illus.

PERMAR, D. A manual of oral embryology

and microscopic anatomy. 1955. 109p. illus.

SOAGNNAES, R. F. ed. Advances in experimental research. A symposium presented December 29, 1953 at the Boston meeting of the AAAS. 236p. illus.

U.S. NAVAL MEDICAL SCHOOL. Color atlas of pathology. 2nd ed. 1954. 450p. illus.

WILLIER, WEISS, and HAMBURGER. Analysis of development. 1955. 735p. illus.

WRIGHT, G. P. An introduction to pathology. 2nd ed. 1954. 636p. illus.

Economic Security

Why Not Whole Life?

Part III

by E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.,
Consulting Economist, and Administrator of the
C.D.A. Plan.

We now come to the third phase of our study of the "Whole Life" form of assurance contract: the extent to which it usefully can be employed as a medium for

at the outset, but that after the contract has been in force for a few years, the savings element increases until at about age 65, the cash surrender value should approximately equal the premiums paid in, without interest.

This cash surrender value would range between \$450.00 and \$520.00, according to the age undertaken, per \$1,000.00 sum assured. Applied to purchase of pension under the "settlement options" of the con-



Fig. 1 Effect of Mortality on Savings in 'Whole Life'

savings and the production of retirement income. It will be recalled that in March, 1954 issue of the "Journal," it was demonstrated that the "mortality element" predominates in this form of contract. Since mortality increases with age, the effect may be diagrammed in Figure 1.

It will be observed that there is no savings element—"Cash surrender value"—

tract would produce \$2.70 to \$3.10 monthly pension at age 65, guaranteed ten years and for life thereafter. Considering the Whole Life contract from the savings aspect alone, it is not as efficient as a savings account in the bank.

The examination of this form of contract is not complete, however, until we apply the same tests to another form of

assurance: combined Pension-Assurance. In this the relationship of mortality and savings is expressed as in Figure 2.

It will be observed that, while producing an equal amount of protection to age

TO RECAPITULATE THE FINDINGS OF THIS STUDY OF WHOLE LIFE:

1. The actuarial assumptions upon which the Whole Life contract is based do not agree with the eco-

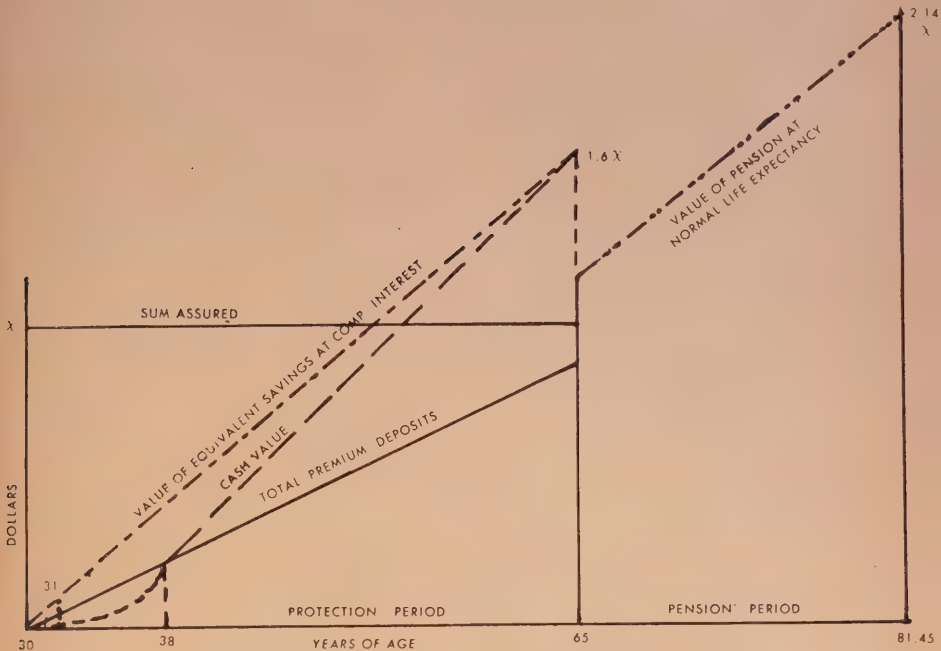


Fig. 2. Effect of Altered Relationship of Mortality and Interest in Pension-Assurance

65, the cash values commence earlier with Pension-Assurance, that the cash value at 65 is more than three times that of Whole Life, and that at normal life expectancy, the Pension will more than double the original investment. Pension-Assurance, of course, commands a higher premium rate than Whole Life, but the important point is that the increase in Benefits in normal circumstances is much greater in proportion to premium: It may be stated that in return for *equal sums in premium*, Pension-Assurance will yield a *return twice* that of Whole Life.

nomie needs of the professional man, although it may serve others.

2. As protection over the period which the professional man requires protection, it is too expensive.
3. As a medium for savings, it is inefficient and yields an inadequate return.
4. Other forms of assurance, particularly Pension-Assurance combined with Family Income, serve the dual economic needs of the professional man—protection and savings—more satisfactorily and efficiently.

The Corps

Brigadier E. M. Wansbrough visited the Canadian Army Militia Camp at Niagara-on-the-Lake on July 1, 1955.

The Royal Canadian Dental Corps Militia summer training was concentrated at three regional camps this year. The eastern camp was held at Utopia, N.B., the central camp at Niagara-on-the-Lake, Ont. and the western camp at Sarcee, Alberta. Lt.-Col. I. A. L. Millar, Commandant of the R.C.D.C. School, spent a week at each camp as representative of the Directorate of Dental Services.

Colonel C. B. H. Climo, Deputy Director General Dental Services, recently completed the annual inspection of No. 12 Company R.C.D.C. (R), where he visited all dental installations.

Lt.-Col. C. Spencer Lea, M.B.E., Calgary, Alberta, has been appointed Assistant Director Dental Services on the Advisory Staff (Militia) at Western Command and promoted to the rank of Colonel. Col. Lea served overseas with the Canadian Dental Corps from 1941 to 1945, seeing service in the United Kingdom, Italy and Northwest Europe. In the spring of 1945, he organized and commanded the Canadian Dental Corps Technical Training Centre at Utrecht, Holland.

Col. Lea commanded No. 59 Dental Unit, Calgary, from 1951 to 1953. He now succeeds Col. W. E. Addinell, Edmonton, Alberta, who has retired.

The following awards of the R.C.D.C. Training Trophies were made by the Commandant of the R.C.D.C. School at the conclusion of Course I for R.O.T.P. and C.O.T.C. personnel:

- (a) Honour Cadet Trophy —
O/C W. D. McGinnis
University of Alberta
- (b) Field Exercise Trophy —
O/C W. D. McGinnis
University of Alberta
2/Lt. O. Chaikin
University of Alberta
- (c) Recreational Training
Trophy —
University of Alberta

The following is an extract from an article by Surgeon Rear Admiral (D) L. B. Osborne, F.D.S. R.C.S.Edin., L.D.S.Eng., Q.H.D.S. which appeared in the British Dental Journal of June 7, 1955:

"A WELL-EQUIPPED UNIT

The 25th Forward Canadian Dental Unit was most impressive and was composed of a Base Camp situated just south of the Imjin River, and a fleet of seven Mobile Surgeries fitted into heavy trucks. The camp was set up like a Boer laager with trucks and tents forming a hollow rectangle. This rectangle was sectioned off into dental, motor transport, stores, messing and accommodation portions. The dental section contained 4 trucks and a trailer, containing office, laboratory (two trucks placed end to end), surgery, and a power generator. The M.T. Section had an oiling ramp, workshop and a jeep garage which was converted at night by means of a bogus front into a cinema called "The Cavity". Next to this were various tents and huts for food, clothing, dental stores, spare M.T. parts, etc., and a truck containing valuable dental equipment, instruments and materials (e.g. gold for casting). The messes and sleeping accommodation were in tents, only the Command Officer and second-in-command living in trucks fitted as cabins. There were about 40 personnel in the camp, including three dental officers and staff, four dental technicians, M.T. drivers and mechanics, cooks and the Army Postal Officer, who was a lodger. There was also a home-made shower bath worked by a manual fire engine, which though being most unusual in the field, attracted all the ENSA parties to the camp.

The laboratory was very well fitted, and I saw a good number of gold dentures, bridges and inlays that had been cast. The Canadians are very proud of the fact that they supplied gold dentures in the field! Work in the laboratory started at 0400 in the hot summer months, the technicians sleeping in the afternoons.

The officers' mess tent was a cheerful place and had an attractive home-made bar. A feature of the tent was the comfortable-looking settees. These, however, gave one a shock on flopping down, for they were made up of sandbags under curtain material.

From this Base Camp, the fleet of seven Mobile Surgeries in trucks was operated, stored and serviced, and went out to each battalion field ambulance in the Brigade.

When the Brigade was in the line, the dental officer and his attendant went up as required to give emergency treatment with portable equipment. Every Sunday, a number of these Mobile Surgeries returned to base for storing, reporting and truck servicing.

The ratio of dental officers to personnel (1/700), the standard and scale of equipment and materials (use of gold "in the field"), the provision of a self-contained and independent base camp, and a considerable amount of expensive and specialized Motor Transport, appears to be luxurious, but it is necessary to remember that dental health, and the means to achieve and maintain it, are considered very important in Canada, and the fact remains that this Canadian Field Organization is a most interesting example of functional mobility in the field."

Capt. F. M. Nesbitt has been promoted to the rank of Major. Major Nesbitt, 33, was born in Vancouver. He served in the C.D.C. from 1940 to 1945 as dental assistant and technician. Major Nesbitt attended the Faculty of Dentistry, University of Toronto. As an undergraduate he was appointed a 2/Lt. in the R.C.D.C. in September 1949.

On graduation in 1950 he was appointed Captain and served in No. 13 Coy. R.C.D.C., Trenton, and in the Far East.

Major Nesbitt was a member of the Coronation Contingent in 1953. He is married and has one child. Major Nesbitt is stationed at Whitehorse, Y.T.

Twelve new officers who graduated this year have joined the Corps:

Dalhousie University

Capt. D. A. Eisner
Capt. D. E. Williams

McGill University

Capt. R. M. Hamel

University of Alberta

Capt. T. S. Kline
Capt. R. Laba
Capt. R. G. Perry
Capt. M. C. Stroud

University of Toronto

Capt. J. W. M. Bradey
Capt. J. H. Duggan
Capt. J. A. Fleming
Capt. K. N. Munro
Capt. G. A. Taylor

Lt.-Col. O. W. Crummey is commanding the dental unit taking part in Regular Army collective training at Camp Gagetown.

The Provinces

Saskatchewan

More than 150 dentists from all over Western Canada visited Regina June 26 to 29 to attend the 13th convention of the **Western Canada Dental Society**.

The convention was held in the Hotel Saskatchewan and registration began June 26.

An informal reception was held June 26 at 8 p.m. and the convention was opened at 9 p.m. June 27.

Dr. A. Lowery, Moose Jaw, chaired part of the opening session and at noon Public Health Minister T. J. Bentley was the guest speaker at a luncheon at which Dr. F. Wihak, president of the Regina and District Dental Society, presided.

Following afternoon sessions taken up by educational addresses by eminent dentists, an informal hoe-down was held in the Trianon.

Technical addresses occupied sessions morning and afternoon of June 28 and at noon a luncheon was given by the Saskatoon Dental Society.

In the evening there was a banquet and dance in the Hotel Saskatchewan.

During the convention films on dental technique and other subjects of professional interest were shown.

Among the convention speakers was Dr. Harold C. Wittich, Minneapolis, head of the dental department at the University of Minnesota and a well-known authority on dentistry for children.

Dr. Douglas Tanner, Toronto, assistant professor of oral surgery at the University of Toronto, spoke on his specialized subject.

Dr. H. S. McLean, Edmonton, professor of operative dentistry at the University of Alberta, spoke on Roentgenology.

Clinicians at the convention included Dr. J. J. Schacter, Saskatoon and Regina, Dr. S. D. Fraser, Edmonton, head of the department of prosthetics at the University of Alberta, and Dr. M. J. Lipkind, Calgary.

A special program was arranged for ladies attending.

At the same time a convention of the Western Canada Dental Nurses' and Assistants' Association was held in the city. Mrs. Mary McArthur Cragg, Winnipeg, is honorary president and Mrs. Irene McDonald, Regina, is president.

Registration was held in the Drake Hotel.

Arrangements for the Dental Society convention were in the hands of a committee of Regina dentists including Dr. R. O. Brett, convenor, Dr. J. E. McDiarmid, Dr. W. F. Hancock, Dr. L. J. Fasken, Dr. Ben Reid, Dr. F. Wihak, Dr. B. J. Koenig, Dr. A. Chegwin, Dr. D. M. Parker, Dr. C. M. Weicker, Dr. A. D. Baker, Dr. T. Smith, Dr. D. McFarlane, Dr. W. D. Robb, Dr. P. Bookhalter, Dr. C. Dixon and Dr. H. Robb.

Officers of the society are Dr. L. D. Haselton, Saskatoon, president; Dr. Warren J. Riley, Winnipeg, first vice-president; Dr. J. C. Ward, Edmonton, second vice-president; Dr. W. K. Martin, Regina, secretary; and Dr. Ben Bookhalter, Regina, treasurer.

At a recent meeting of the **Saskatoon Dental Society**, the following were elected to office for the 1955-56 season:

President, Dr. P. Rabitch; vice-president, Dr. H. H. Cowburn; secretary-treasurer, Dr. K. Epstein.

L. D. H.

British Columbia

The Empress Hotel was the setting for the April meeting of the **Victoria and District Dental Society**, at which four local practitioners presented the following clinics:

Dr. Allan Daysmith—"Vincent's Infection"
Dr. Douglas McDougall—"Impression Technique, Crown and Bridge"

Dr. Percy Rumball—"Orthodontic Problems"
Dr. Drake Middleton—"Paedodontic Problems"

On May 16 the concluding session took place when this slate of officers was selected for the coming season: President, Dr. A. H. Gunning; vice-president, Dr. C. B. Jameson; secretary, Dr. R. M. Torrie; treasurer, Dr. V. V. Marnell; directors, Drs. W. G. Demp-

sey, A. Daysmith and W. D. McDougall.

The retiring president, Dr. Stanley Miles, gave the annual report and handed over the gavel to his successor.

The Spring Golf Tournament of the **Vancouver and District Dental Society** was held at Burquitlam on May 12, and although the attendance was smaller than anticipated, it was an enthusiastic meet from start to finish. These were the chief prize winners:

Low gross (Leach Shield)—Dr. M. Krasnoff
2nd low gross (B.C. Dental Supply)—

Dr. A. J. Campbell

1st low net (Ash Temple Cup)—

Dr. M. Warshawski

2nd low net—Dr. W. G. Denovan

Low gross, 1st nine—Dr. S. Corman

2nd nine—Dr. T. G. Booth

The Golf Committee (Dr. Dick Butler, chairman) is grateful to the two larger dental supply companies for their generosity in donating miniature trophies and one dozen golf balls each for other prizes.

The **Fraser Valley Dental Society** held a meeting on May 5 in the Aldergrove Hotel when Dr. M. Chechik of Vancouver, an able speaker, presented his clinic on "Prefabricated Pins."

D. H. M.

New Brunswick

Two dental clinicians from Dalhousie University, Halifax, addressed the members of the **Saint John Dental Society** at the final meeting of the season, held in the Admiral Beatty Hotel on May 28, 1955, in the afternoon and evening.

Dr. R. F. Sansom, president, opened the meeting and welcomed the speakers and a guest, Dr. G. G. Orser, Woodstock.

Dr. James MacLean, professor of dentistry and dean of the dental faculty, Dalhousie University, was introduced by Dr. J. F. Edgecombe, and spoke on the subject, "Amalgam Fillings, and Principal Causes of Failure."

The second speaker, Dr. James McGuigan, professor of children's dentistry and dental histology at Dalhousie, was introduced by Dr. James O'Brien. Subject of his talk was, "Inflammation of the Dental Pulp, with Special Emphasis on the Use of Calcium Hydroxide."

Crystal decanters were presented to the two clinicians at the buffet dinner, held in the Admiral Beatty Hotel. The annual dance of the Society followed the dinner.

Chairman for the afternoon meeting, was Dr. A. Bona.

Nova Scotia

On May 17, 1955, **Dalhousie University** conferred the Degree of Doctor of Dental Surgery on the following successful candidates: R. L. Bull, A. W. E. Cluett, R. A. Downton, D. A. Eisner, L. J. Frost, A. E. Hoffman, (Miss) K. Obrascova, R. W. Pentz, W. G. Prentice, R. B. Ross, H. L. Sable, D. E. Williams, and I. M. Hamilton.

The prize winners were as follows: Frank Woodbury Memorial Prizes—Thesis—L. J. Frost; Infirmary—W. G. Prentice; Laboratory—R. L. Bull. Crosby & McGuigan Children's Dentistry Prize—Equal Merit—R. L. Bull, W. G. Prentice, Modern Dental Laboratory Prosthetic Prize—R. W. Pentz. John W. Dobson Periodontia Prize—A. E. Hoffman. Alpha Omega Plaque—Highest Standing in Examinations—A. E. Hoffman. American Academy of Dental Medicine Prize—A. E. Hoffman.

H.M.E.

Ontario

Dr. Paul Bennett has accepted a position as assistant Dental Officer of Health for the city of Kitchener, it was learned recently.

Dr. Bennett has been practicing dentistry in Elmira since 1950 and shared offices with Dr. A. C. Carbert.

Duties with the Kitchener board of health commenced July 4.

Dr. E. C. McKee was re-elected president of the **Peterborough and District Dental Society** at the annual meeting on June 1st, 1955. Drs. Allan F. MacDougall and R. H. Campbell, Lakefield, were elected vice-president and secretary-treasurer respectively.

Plans for interesting Clinics are being made for the coming year. Dr. D. J. E. Mitchell gave a report on Dental Public Health.

Dr. W. J. Langmaid, district representative on the Board of Directors of the Royal College of Dental Surgeons was the guest speaker. He informed the fourteen dentists present that the Royal College of Dental Surgeons had fully endorsed fluoridation of water. Plans for a new building are underway which, when completed, will be the finest on the continent. Costing approximately \$5 million, the new building will increase enrolment from 75 to 150

graduates per year. That the cost of carrying on our publications had risen greatly and also that of Honorary memberships 120 in all. Dr. Langmaid recommended Good Public Relations, duplicate prescriptions to Dental mechanics and stated that only one-third of the dentists of Ontario attended clinics or conventions. Dr. Langmaid was thanked by Dr. McKee and on motion of Drs. Ralph Green and Ralph Honey was made an Honorary member of the Society.

R.H.C.

At a recent meeting the **Inter-County Dental Association** elected the following members to office for the season 1955-1956: President—Dr. Paul Treumner; Vice-President—Dr. Ralph A. Hunt; Secretary—Dr. Harry Bobbie; Treasurer—Dr. Lorne Hemmerich.

The **Hamilton Dental Association** has elected its 1955-1956 executive: President—Dr. G. W. Morrow, Vice-President—Dr. J. F. Kilgour, Secretary—Dr. W. H. Feasby, Treasurer—Dr. P. T. Smylski, Chairman of Programme Committee—Dr. D. L. Anderson and those elected Directors—Dr. L. J. Easter and Dr. R. H. Finlayson. The Immediate Past President is Dr. W. J. Hambley.

On June 15, 1955, the Annual Picnic of the Association was held at the summer home of Dr. P. T. Smylski at Winona. Seventy-five dentists of the area enjoyed a pleasant afternoon of fellowship and games.

The Annual Golf Tournament will be held in August at the Glendale Golf Club in Hamilton and Dr. E. Corsini and Dr. M. Weaver are in charge of the event.

Dean R. G. Ellis has been granted a sabbatical leave to the end of the year. When this was learned, some of his colleagues conceived the idea that this would be a good excuse for a Faculty get-together which would also afford the members of the staff an opportunity to say bon voyage to their chief.

It was agreed that the affair should be restricted to the active members of the staff of the Faculty of Dentistry. The idea was enthusiastically received, so much so that when dinner was served at the Granite Club on Thursday, June 16th, seventy-four were there to do it justice. The evening was an entirely informal one, Mac Sheldon being the sole chairman, controller and

speaker. Although he had to be drafted for the job (as our Usanian friends would say), he amply vindicated his title of **praetor superbis** in this capacity. He was brief, eloquent and witty. As the staff had all been sworn to secrecy, the Dean who came to dine with one friend, upon his arrival found himself the guest of some seventy more, who presented him with a chair whereon in later days he might sit and recall the esteem in which he is held by his colleagues.

C.C.R.

The termination of the fifth annual meeting of the **Canadian Society of Dentistry for Children**, held at the Royal York Hotel on Saturday, May 14th under the presidency of Dr. Lorne Scott, revealed that an all time high in attendance had been recorded. The executive of the society were gratefully pleased to receive so many communications of commendation upon the high calibre and interest value of the day's programme.

The meeting began with a continuous series of graduate table clinics. Among the capable clinicians were three welcomed visitors from the United States—Drs. W. C. Fletke, and J. E. Mortell, University of Michigan, and R. B. Keilich, Buffalo, N.Y. Following the table clinics was a provocative and illuminating paper entitled "Handling of the Difficult Patient through Sedation and Anaesthesia" presented by Dr. Manuel M. Album.

During the subsequent business meeting the society reaffirmed its unqualified endorsement of fluoridation of communal water supplies as a sound public health procedure. At this time too, the Society members were presented with the names of their newly elected officers. The officers for 1955-56 are as follows: Honorary President—Dr. Lorne Scott, President—Dr. Don Rife, President-Elect—Dr. Wilf Feasby, Secretary-Treasurer—Dr. Don Anderson, Historian—Dr. Art Wood.

Visiting members from New York State, Florida, Manitoba, Alberta, and Nova Scotia were made welcome during the scheduled luncheon.

The afternoon session commenced with a paper on "The Incidence of Sucking Habits in Three Year Olds and its Relationship to Occlusion" presented by Dr. Frank Popovich, who handled his immense subject with clarity and discretion.

The day's activities terminated with a symposium on the "Advances in Caries Research." The panel was moderated by Dr. J. B. Macdonald who introduced his research team of Drs. K. J. Paynter, G. Niki-

foruk and A. W. S. Wood, each of whom presented a short, lucid paper on a specific phase of dental research. When time no longer permitted further audience participation, Dr. Macdonald closed the panel discussion with some thought provoking words on the future and philosophy of dentistry.

The newly elected and esteemed president of the Canadian Society of Dentistry for Children, Dr. Donald Rife, then adjourned the meeting.

E. R. W. B.

During recent years the **Executive Council of the Academy of Dentistry, Toronto**, became increasingly aware of the need for a central place of registration for persons desiring employment as Dental Nurses or Assistants and where dentists might secure such personnel with a minimum of delay, expense and inconvenience.

Previously such assistance was acquired in a more or less haphazard manner. Dentists advertised through the press and this entailed, in addition to loss of time before applicants replied, many laborious hours in sorting out the mail received (many replies were worthless) and in numerous interviews. The Dental Supply houses each kept a list and attempted to aid the profession in this manner. In this there were many duplications between the various supply house lists and some confusion resulted. Many dentists secured assistants by "word of mouth" passed on to their confreres and their assistants. On the whole it appeared that the existing situation was not satisfactory and an improvement could be made.

In 1952 the Council's thoughts were directed towards some form of **Nurses' Registry** by Dr. J. Gordon Chalmers, the President at that time. A committee was formed to investigate the possibilities and the manner in which such a registry could be operated. This committee met with representatives of the Dental Nurses and Assistants groups, registered nurses, practical nurses and their registries. From the ideas and suggestions received from these meetings the committee developed a plan which appeared to serve the existing need. First the problem of operating such a registry was found to be entirely remote from those of existing registries, such as those for registered and practical nurses, where employment was usually of short duration and a great variety of movement was involved. Here the onus was on the nurse to support the registry through commissions from the fee received from the patient. The terms, hours, rates of pay, etc., were dictated by the registry. Members also paid an

annual sustaining fee to the registry. From these facts the committee decided that the purpose of our registry would be merely to provide a source of contact between dentists and possible assistants, and that the applicants would be classified as to qualifications, experience and type of employment desired (permanent, part time, temporary, etc.). It was further determined that the control of the registry should remain in the hands of the profession — i.e., the Academy of Dentistry — in order to ensure its ethical operation and certain other desirable features.

During the year 1953-54 the registry was put into operation on a trial basis through the facilities of Dr. Chalmers' office. While no publicity was given to the registry, there were many demands on it. The need was definitely proven and solving the problems during the actual operation provided the required information to set the registry up on a more permanent basis. It was thought to be most desirable to locate the registry

in the offices of one of the dental organizations with permanent quarters. This was not feasible at that time.

We were able to secure as our agent Mr. I. M. Hannah, who had been associated with a dental distributing firm and who was quite familiar with the needs of the profession. Mr. Hannah assumed the responsibility of operating this registry in January 1955 under the terms of agreement with the Academy of Dentistry, Toronto.

While the Academy is sponsoring this registry, it receives no financial return from it. To date its operation is more than satisfactory. The quality of service that is being rendered to members of our profession here in Toronto, at a moderate cost, is remarkable. The volume of requests and the many letters of appreciation received from both dentists and nurses who have benefitted through this registry are most gratifying.

This venture, undertaken by the Academy of Dentistry, Toronto, has certainly proven to be worth while.

W. J. S.

In Memoriam

John Alexander Robinson. — Dr. John Alexander Robinson, who has practised dentistry in the city of Niagara Falls, Ontario, for the past thirty years, died suddenly on June 13th, 1955, at the Greater Niagara General Hospital. He was 59.

Born in Kenmore, Ont., Dr. Robinson graduated in dentistry from the University of Toronto in 1924, following which he took a post-graduate course in Rochester, N.Y. In 1950 he limited his practice to orthodontics after taking a post-graduate course at the University of Montreal. A 32nd degree Mason, Dr. Robinson was a member of the Elgin Lodge of Perfection A.A.S.R., the Moore Sovering Consistory, Hamilton, Ont., a life-member of the Cataract Lodge I.O.O.F. No. 103, a past patron of the Queen of Sheba Chapter No. 106, Order of the Eastern Star and a royal patron of Power City Court No. 1. He was a former member of the Board of Education of the City of Niagara Falls. Dr. Robinson was a member of Kenmore Baptist Church.

Besides his wife, the former Jennie Carkner, he is survived by two sisters, Mary Robinson, of Kenmore, and Mrs. Margaret Duff of Ottawa, and two brothers, Robert, of Kenmore and Peter, Perth, Ontario.

James Henry Carrique. — Dr. James Henry Carrique, of Toronto, passed away on June 22, 1955. He was 92.

Born in Trafalgar Township, Dr. Carrique practised in Collingwood, Milton, Sprucedale and Sarnia before coming to Toronto. He was one of the earliest graduates in dentistry from the University of Toronto, 1886, and had practised until 10 years ago. He was an Honorary Member of the R.C.D.S. having been registered for the past 69 years.

Dr. Carrique is survived by his daughter Mrs. Evelyn Wellman and two sons Henry and Nelson.

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Charles Robertson. — Dr. Charles Robertson, of Nanaimo, B.C., passed away at his home on May 28, 1955, after a lengthy illness.

Born at Portage La Prairie he practised at Meadow Lake, Sask., for many years prior to his retirement fifteen years ago when he came west to reside in Nanaimo.

Dr. Robertson was a life member of Climax Lodge, A.F. & A.M. at Climax, Sask. He was also an honorary member of the Fraser Valley Dental Association.

Predeceased by his wife, Anne, two years ago, he is survived by two daughters, Mrs. W. E. Bright of Calgary and Mrs. A. W. B. Benson of Nanaimo.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1 9 5 6	Banff, Alberta	June 3rd—6th
1 9 5 7	Winnipeg, Manitoba	June 23rd—26th

FUTURE EVENTS

<i>Date</i>	<i>Function</i>	<i>Location</i>	<i>Officer</i>	<i>Location</i>
Aug. 14-20	Federation Dentaire Internationale	Copenhagen	W. Riis Klausen	1 Alhambravej Copenhagen V.
Sept. 9, 10 11	Northern Ontario Dental Association	Sudbury	Dr. A. B. Sutherland	Sudbury, Ont.
Sept. 18, 19, 20	Eastern Ontario Dental Association	Ottawa	Dr. A. C. Stinson	202 Laurier Ave. Ottawa, Ont.
Oct. 13-15	American Academy of Periodontology	San Francisco	Dr. Ernest G. Baker	American Academy of Periodontology
Oct. 14-16	Dental Alumni Assoc. Annual Homecoming	Toronto	Dr. R. C. Moore	2 Grenview Blvd. Toronto, Ont.
Oct. 18	50th Anniversary of Dental Alumni of McGill University	Montreal	Dr. Bruce Ward	1414 Drummond St. Montreal, P.Q.
Oct. 19-24	Montreal Dental Club Annual Fall Clinic	Montreal	Dr. Bruce Ward	1414 Drummond St. Montreal, P.Q.
Oct. 23-27	American Institute of Dental Medicine	Palm Springs, California	Miss Marion G. Lewis	2240 Channing Way, Berkeley 4, Cal.
Oct. 23-28	The Mexican Dental Association—Third International Dental Congress	Mexico City, Mexico	Dr. German Sanchez Cordero	Asociacion Dental Mexicana, Insurgentes 257-13 Mexico 7, Mexico.
Oct. 24	Academy of Dentistry Annual Dinner	Toronto	Dr. Robt. Marshall	200 St. Clair W., Toronto
Nov. 25	Academy of Dentistry Winter Clinic	Toronto	Dr. Robt. Marshall	200 St. Clair W., Toronto
Dec. 4	American Academy of Dental Medicine Meeting	New York	Dr. George J. Wilkin	45 S. Broadway, Yonkers 2, N.Y.

SHORT GRADUATE COURSES

<i>Date</i>	<i>Course</i>	<i>Location</i>	<i>Address</i>
Sept. 19-23	Occluso-Rehabilitation	Tufts School of Dental Medicine	Dr. Irving Glickman, Director Division of Post-Graduate Studies 136 Harrison Ave., Boston, Mass.
Nov. 14-18	Periodontics	Tufts School of Dental Medicine	Dr. Irving Glickman, Director Division of Post-Graduate Studies 136 Harrison Ave., Boston, Mass.
Jan. 9-13	Full Denture Implants	Tufts School of Dental Medicine	Dr. Irving Glickman, Director Division of Post-Graduate Studies, 136 Harrison Ave., Boston, Mass.
Jan. 16-18	Splinting in Periodontics	Tufts School of Dental Medicine	Dr. Irving Glickman, Director Division of Post-Graduate Studies, 136 Harrison Ave., Boston, Mass.
Jan. 22	Orthodontics	Temple University	Dr. Louis Herman, Dir. of Postgraduate Studies, Temple University School of Dentistry, 3223 North Broad St. Philadelphia, Penn.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Les soins dentaires à paiements anticipés*

par C. ABERDEEN McCABE, D.D.S., F.I.C.D.,
Valleyfield

Aux premiers siècles de la civilisation, alors que l'homme commença à s'intéresser à sa sécurité et à sa santé (le facteur le plus important de sa sécurité) naquit l'idée de sécurité sociale, et l'on vit apparaître à tour de rôle les guildes ou corps de métier du Moyen-Age qui accordaient des secours à leurs membres en cas de maladies ou blessures.

Au XIV^{ième} siècle, les corporations de compagnons attachaient beaucoup d'importance à l'aide mutuelle au moyen de caisses accessoires alimentées par des contributions calculées d'une façon approximative.

Au XVIII^{ième} siècle, la découverte de la loi de mortalité et la publication, en 1850, d'es tables de Ratcliffe, surnommé le père de la science actuarielle des sociétés de secours mutuel, ont fourni une base mathématique au développement de l'assurance en tant qu'entreprise commerciale.

Mais voilà que les découvertes scientifiques industrialisent le monde; les so-

ciétés mutuelles oublient leur but humanitaire, elles deviennent matérialistes, et, au XVIII^{ième} siècle, la tyrannie des corporations de maîtres fut la cause d'une régression à un point tel, qu'en 1835 leurs privilèges furent abolis par une loi, en Angleterre, et aussi bientôt en France lors de la Révolution¹.

Dès ce moment, les relations entre salariés et patrons furent régies par le droit coutumier, et chaque ouvrier fut libre de déterminer les termes d'embauchage avec son patron. Afin d'établir de bonnes relations avec leurs employés, les employeurs firent renaître l'idée de sécurité sociale et la mirent en pratique. En effet, à peine deux ans plus tard, soit dès 1887, la Great Western Railway, d'Angleterre, ajoutait un service dentaire aux services médicaux et chirurgicaux déjà offerts à ses employés. Trois ans plus tard, le mouvement se propagea à l'Amérique du Nord alors que la Barber Match Co. organisa pour ses employés un programme dentaire. En 1900, à Rio de Janeiro, Brésil, le Dr Hector Baretto offrit aux 300 employés de la Cia Lug Stéarica (compagnie Sud-Américaine), un service

*Séminaire présenté à l'Ecole d'Hygiène de l'Université de Montréal, le 21 mars 1955.

dentaire qui exista plus d'un quart de siècle². Ainsi naquit la dentisterie industrielle, précurseur des soins dentaires à paiements anticipés.

Les soins dentaires à paiements anticipés sont des systèmes par lesquels, une ou plusieurs personnes contribuent un certain montant périodiquement à une organisation ou caisse commune, en vue d'obtenir au besoin des soins dentaires.

Les soins dentaires à paiements anticipés peuvent être uniquement une transaction individuelle entre une personne et son dentiste, tel que le démontre le Dr Charles A. Sweet, d'Oakland, Californie, qui a eu 125 enfants sous ce système, dont 110 pour une période de 20 ans, soit de l'âge de 2 à 22 ans. Tous ont reçu des soins périodiques. Le maximum de temps requis fut 6½ heures par enfant, par année, le minimum 1 heure et 6 minutes, soit 55 heures par enfant pour les 20 ans, en plus du temps requis pour les soins orthodontiques à un tiers des enfants et des extractions compliquées aux mains de spécialistes³.

Walter C. McBride, pédodontiste de Détroit, Michigan, qui à raison de \$25 par enfant par année a eu peu de succès avec ce système, en énumère comme suit les trois facteurs dangereux: 1—Les parents exigent des rendez-vous à très brève échéance; 2—Ils sont portés à soutirer du système les enfants requérant peu de soins; 3—Ils maintiennent sous ce système les enfants qui ont besoin de soins fréquent et intensifs. 4—Nous pouvons donc conclure qu'il y a peu d'espoir d'établir des systèmes de soins dentaires à paiements anticipés de caractères individuels.

Les soins dentaires à paiements anticipés peuvent être organisés par des sociétés d'aide mutuelle: 195 plans furent ainsi organisés selon le principe coopératif, au coût de \$3.93 par année par famille, ainsi que 62 plans conjoints d'hospitalisation et chirurgie qui pour \$2.20 par année par famille incluaient les soins dentaires. Ces plans d'assurance facultative aux Etats-Unis, pendant la crise financière, favorisaient surtout les extractions, très

peu d'assurés bénéficièrent d'obturations, et les enfants de 0 à 20 ans furent les plus négligés. Les dentistes, rémunérés à tant de l'item, se contentaient d'un pro-rata lorsque la caisse manquait de fonds. Organisés sous l'égide du Farm Security Administration Health Program, ils furent dissous après quelques années d'existence⁴. Quelques plans similaires ont existé dans plusieurs grandes villes canadiennes, mais nous avons raison de croire qu'ils étaient presque du domaine de l'assistance.

Les compagnies d'assurances régulièrement constituées dans un but de gain pour leurs actionnaires peuvent aussi s'intéresser aux soins dentaires à paiements anticipés. Cependant ces compagnies considèrent que l'assurance présuppose un élément de risque, et aucune d'elles n'assure contre une certitude, telle une maison en flammes ou encore la dépréciation annuelle d'une propriété, à moins de charger la valeur totale de la perte plus les frais d'administration plus un profit raisonnable. Nous savons que les soins dentaires périodiques sont essentiels depuis la plus tendre enfance jusqu'au dernier soupir; ces compagnies ne peuvent donc pas assurer la santé dentaire à un taux raisonnable. Ils limitent donc leurs activités à l'assurance des catastrophes dentaires, accidents ou maladies dont le caractère d'occurrence est incertain, telles que fractures des maxillaires, luxations, ablations de dents incluses, etc. . . . Un grand nombre de ces compagnies ont même, depuis quelques années, éliminé de leurs prestations tous les soins dentaires. Il semble cependant y avoir un regain d'intérêt dans ce domaine, et l'on envisage même la possibilité d'assurer un enfant naissant contre la nécessité de soins orthodontiques à venir. Cet intérêt semble si grand que lors de la réunion du Comité d'Assurance Santé de l'Association Dentaire Canadienne, tenue les 28 et 29 mars derniers, un sous-comité sous la présidence du Dr T. R. Marshall fut formé pour étudier toute cette question avec les compagnies intéressées.

La plupart des assurances facultatives à but non-lucratif organisées par la pro-

fession médicale, opèrent sous le signe de l'Écusson Bleu, et comme les lois de certains états obligent ces organisations à payer la rémunération aux médecins, cela cause certains embarras et entrave la possibilité d'inclure les soins dentaires à paiements anticipés dans beaucoup de ces assurances. La plupart de celles qui s'y intéressent ne donnent droit à ces soins que s'il y a hospitalisation ou pour des catastrophes dentaires. Exemples: Le Massachusetts's Medical Service: chirurgie dentaire à l'hospitalisé seulement; le Medical Service Association of Pennsylvania: chirurgie dentaire à l'hôpital par le dentiste attaché à l'hôpital; l'Oregon Physician's Service: soins dentaires pour fracture des maxillaires; la Coopérative de Santé de Québec, maintenant connue sous le nom de Services de Santé de Québec: donne certains soins dentaires, y compris les radiographies, lorsque les soins sont recommandés par leur médecin; le Fraser Valley Medical Dental Society, de Colombie Britannique, et autres sociétés, trop nombreuses pour être énumérées ici, offrent certains soins dentaires à paiements anticipés.

Il y a 229 organisations de services de santé à base de paiements anticipés aux Etats-Unis, dont 92 prévoient aux soins dentaires, soit à paiements anticipés ou à tarifs réduits. Des 5 millions de personnes éligibles aux services à paiements anticipés, un tiers ont aussi droit aux soins dentaires spécifiés dans leur plan. Quelques-uns prévoient des soins dentaires assez complets, chirurgie, et prothèse. La plupart, cependant, se limitent à un ou deux des soins mentionnés et ceux qui incluent la prothèse exigent ordinairement un paiement additionnel.⁷

Nous avons fait allusion, au début, à l'intérêt que porte l'industrie et les unions ouvrières à la santé dentaire. C'est encore ici que nous rencontrons le plus d'intérêt aux soins dentaires à paiements anticipés...

PRECISONS NOTRE PENSEE

Le Council on Dental Health de l'Association Dentaire Américaine définit

comme suit la dentisterie industrielle: "Cette spécialité de l'art dentaire qui s'occupe de la santé dentaire des employés industriels, en tant qu'elle affecte ou qu'elle est affectée par sa santé générale ou son milieu de travail."⁸

Dès 1926, une industrie de papier à Grand'Mère, province de Québec, assurait gratuitement un examen dentaire et une prophylaxie deux fois l'an à ses employés; tous devaient y avoir recours. Ceux qui avaient besoin de soins supplémentaires et qui faisaient partie de l'Association de Bénéfices Mutuels, étaient dirigés chez le dentiste de leur choix, qui exécutait le travail; le coût de ces soins dentaires était défrayé à raison d'un tiers par la compagnie, un tiers par l'Association de Bénéfices Mutuels et un tiers par l'employé. Faisaient partie de la dite association les employés qui souscrivaient volontairement de 50 sous à \$1 50 par semaine, selon leur salaire. En plus des avantages dentaires, ils retiraient des prestations variant entre \$10.00 et \$30.00 par semaine, en cas de maladie. Ce système, obligatoire pour certains soins dentaires préventifs, et facultatif pour les autres soins, a eu, nous dit la compagnie,⁹ une très avantageuse répercussion sur la santé générale de leurs employés. Après trois ans, leurs rapports révélaient une sensible diminution d'absences par maladies rhumatismales et autres semblables. Cependant, en raison de la crise financière de 1929, ils durent définitivement discontinuer ce service de soins dentaires à paiements presque totalement anticipés.

Aux Etats-Unis, environ 33% des membres appartenant à des systèmes industriels financés par les employés ont droit aux radiographies et 14% aux extractions, sur une base de paiements anticipés. En 1945, plus de 150 dentistes étaient employés à temps complet ou partiel par 25 organisations à paiements anticipés. La moitié des dentistes salariés consacraient tout leur temps aux soins dentaires de 458,000 membres des organisations par lesquelles ils étaient employés, et cinquantièmes des 150 dentistes étaient au compte de systèmes industriels.⁷

La profession dentaire ne peut être accusée d'avoir négligé l'étude de ce problème. Depuis plus de 30 ans, l'Association Dentaire Canadienne⁹, le Collège des Chirurgiens-Dentistes de la Province de Québec¹⁰ et quelques autres organismes similaires des autres provinces, ainsi que l'Association Dentaire Américaine et plusieurs de ses sociétés filiales en ont fait une étude intensive. Les deux associations nationales ont adopté des principes^{11, 12} en ce qui a trait à ce genre de système, et recommandé l'établissement de plans expérimentaux de soins dentaires à paiements anticipés.^{13, 14}

Au mois d'août 1953, 9,000 des 14,000 membres éligibles du Teamsters Union, Local No 688 avaient déjà bénéficiés du service complet de soins médicaux et dentaires y compris rayons-X, extractions et soins préventifs offerts par le Labour Health Institute de St-Louis, Missouri, au coût d'une contribution égale à 5% de leur salaire. Ce programme est organisé sous forme de clinique-groupe.¹⁵

Depuis l'an dernier, le mouvement ne se limite plus aux ouvriers, mais il s'étend aussi à leurs dépendants. En effet, le 23 mai 1954 l'Union Internationale des Débardeurs et Employés d'Entrepôts en est venue à une entente avec la Pacific Maritime Association, au sujet d'un projet expérimental de soins dentaires à paiements anticipés qui sera financé par leur caisse d'assistance mutuelle, qui a accumulée une réserve de \$750,000. Il y a deux faits de la plus grande importance à noter dans ce plan qui couvre tous les soins dentaires à l'exception des soins orthodontiques, c'est qu'il ne s'applique qu'à leurs enfants, et qu'ils auront le privilège de choisir leur dentiste parmi les dentistes participant à San Francisco, Los Angeles, Portland (Oregon), et Seattle (Washington)¹⁶. Dr John Ingle, de Seattle, est président du comité composé de membres de cinq associations et sociétés dentaires intéressées; ce comité a charge de négocier les procédures à suivre pour l'administration du plan.¹⁷

Le Group Health Dental Insurance Inc., corporation non lucrative établie selon les

lois de l'état de New-York et approuvée par l'association dentaire du district a aussi inauguré un programme expérimental de soins dentaires à paiements anticipés pour une période de deux ans. Celui-ci s'applique aux adultes aussi bien qu'aux enfants et sera limité à 25,000 souscriptions, qui, pour y adhérer, devront faire partie d'un groupe de 40 employés ou plus dont au moins 75% consentiront à y participer. Le souscripteur reçoit premièrement un examen dentaire et 19 radiographies. Il doit cependant payer les frais nécessaires à la réhabilitation de sa bouche jusqu'à concurrence de \$150. L'excédent ainsi que les soins dentaires subséquents sont gratuits si son revenu est inférieur à \$5000. Si son revenu est supérieur à ce montant, il doit en plus payer la différence entre le tarif du G.H.D. Ins. Inc. et le tarif normal de son dentiste. La prime mensuelle est \$1.65 pour un individu, \$3.30 pour un couple sans enfants et \$6.00 pour le père, la mère et les enfants non-mariés en-dessous de 18 ans. Ils offrent aussi une seconde police à meilleur compte mais ne donnant droit qu'à 50% des bénéfices. Ce plan est l'oeuvre du Dr Bissell B. Palmer, ex-président de l'American College of Dentists.^{18, 19}

Le 15 septembre 1954, l'Union des Employés en Art Culinaire ainsi que celle des Employés de Tavernes ont aussi organisé, avec un groupe de dentistes à qui ils garantissaient un revenu mensuel minimum, un programme de soins dentaires à paiements anticipés pour eux et leur dépendants. Ils ont cru, au début, que des 21,000 personnes éligibles, environ 3,400 par mois, auraient besoin de soins dentaires; ce chiffre, qui a presque doublé en trois mois, a nécessité l'expansion de leurs effectifs de 50%. Le programme est financé à raison de 1 sous de l'heure sur les 6 sous que paient les employés à la caisse mutuelle de Bien-Etre et Santé de l'Union, plus un sous de l'heure provenant d'une augmentation de salaire récente.²⁰

D'autres systèmes de soins dentaires à paiements anticipés existent ou sont projetés, tels que le Permanent Foundation Plan d'Oakland, Californie, l'American

Federation of Medical Centers Inc. de Détroit, Michigan, le Prepayment Plan for Children du Dr Chrietberg, directeur dentaire du Département d'Hygiène Publique d'Illinois¹⁵, et le Group Health Association de Washington, D.C. Le temps ne nous permet pas de tous les décrire; cependant nous ne pouvons passer sous silence le projet non encore en vigueur mais adopté par l'Association Dentaire Canadienne.²²

Seuls les enfants de 3, 4, 5 et 6 ans seraient admis au début, tous sans examen préalable. Ils doivent néanmoins être les dépendants d'un souscripteur faisant partie d'un groupe de 10 employés ou plus, consentant à ce que la prime soit déduite de leur salaire. A chaque année s'ajouterait au groupe déjà assuré, un nouveau groupe d'âge déjà mentionné, de sorte que dans 10 ans il y en aurait de trois ans à 16 ans.

Il faut donc prévoir à admission, dans quelques années, d'enfants de plus de six ans qui, nouvellement arrivés dans la région ou pour d'autres raisons, n'auraient pas obtenu les bénéfices de l'assurance en bas âge. Ceux-ci devront à leurs frais pourvoir à l'élimination des besoins dentaires accumulés, avant d'être admis.

Pour la première année, la prime mensuelle pourrait être de \$1.50 par enfant de trois ans, \$2.00 pour ceux de 4 ans, \$2.25 pour ceux de 5 ans et \$2.50 pour ceux de 6 ans. Ce plan facultatif étant établi sur une base budgétaire non lucrative, le montant de la prime mentionnée n'est que pour des fins de discussion et pourra être changée sur avis de 30 jours; elle pourrait aussi varier selon les tarifs de la région où serait établi le plan. L'estimé de la prime que nous venons de mentionner fut calculée à l'aide de statistiques compilées pour le Comité par le Dr R. Grainger qui est à la fois dentiste et statisticien qualifié. Le contrat serait pour une année, mais renouvelable automatiquement, chacune des parties contractantes ayant cependant le privilège de la annuler moyennant certaines conditions.

La Section 2 de l'Article 5 des Lois et règlements du projet prévoit aux moins fortunés car les employeurs, sociétés,

groupes et autres autorités ou agences pourront s'inscrire ou contribuer totalement ou en partie au paiement des primes de leurs employés, de leurs membres ou de toute personne qui aurait droit aux soins dentaires en vertu de ce plan.

Une fois le plan bien organisé, on pourra considérer l'assurance individuelle, mais à une prime plus élevée que celle des groupes à cause des frais additionnels d'administration et de collection.

Les enfants assurés recevraient 2 examens, 2 prophylaxies et consultations et deux radiographies annuellement, en plus des extractions et obturations en amalgame, plastique, silicate et autre ciment ainsi que les soins d'urgence pour soulager la douleur. Le système étant basé sur la prévention à un coût modique, les soins suivants ne sont pas inclus: prothèse, ponts, incrustations, couronnes, soins orthodontiques, anesthésie générale, visites à domicile ou à hôpital ainsi que les applications topiques de fluorures.

Une des clauses que nous considérons comme essentielle au succès du plan est le libre choix par le patient ou le souscripteur du dentiste, parmi les dentistes participants; le dentiste n'est pas uniquement un consultant, car il prodigue fréquemment et périodiquement des soins plus or moins agréables que l'enfant n'a pas toujours le temps d'oublier entre deux rendez-vous; tous les dentistes ne sont pas doux comme des agneaux, quoiqu'il y en ait qui ont un doigté harmonieux comme celui d'une harpiste; tous n'ont pas un caractère angélique, ni une capacité psychologique uniforme; or, si l'on ne concède pas à l'enfant la capacité requise pour évaluer les meilleurs soins, il faut tout de même admettre que pour des raisons connues de lui seul, dont les facteurs peuvent être nombreux et variés, l'enfant décide lui-même si un dentiste lui plaît, lui déplaît ou lui est indifférent. Or, pour qu'un programme périodique de soins dentaires préventifs et éducationnels soit un succès, il faut que l'enfant aime son dentiste, qu'il le considère comme son meilleur ami. Le jour où l'enfant commence à dire "J'ai été chez *mon* dentiste" et non "chez le dentiste," sa frayeur, sa

crainte de l'inconnu et son indifférence sont vaincus; il désire revenir, et son éducation en hygiène dentaire se fait comme par enchantement.

Une autre clause importante de ce plan mentionne que la négligence ou le refus de se conformer aux recommandations thérapeutiques peut annuler tous les droits aux services stipulés dans le contrat.

Les divers plans nationaux obligatoires qui offrent des services dentaires sont des systèmes de soins dentaires à paiements anticipés par l'Etat ou un organisme de l'Etat, soit au moyen d'appropriations d'une portion du produit des taxes générales prélevées des contribuables, soit au moyen de cotisations ou de primes obligatoires qui en somme ne sont en réalité rien autre chose qu'une taxe spéciale obligatoire²³.

Nous n'avons nullement l'intention d'évaluer leur valeur médicale^{24, 25, 26}. Nous faillirions cependant à la tâche qui nous a été confiée si nous n'établissions par comparaison les principaux principes fondamentaux qui les différencient des systèmes facultatifs que nous venons de vous exposer. 1—L'unique obligation des systèmes obligatoires est celle d'y contribuer financièrement; nul n'est obligé de se soumettre aux soins qu'ils offrent et aucun parti dans un système démocratique oserait y inclure une clause de soins obligatoires.

Les systèmes facultatifs, tout en respectant le libre arbitre, peuvent y inclure une telle clause par règlement.

2—Dans les systèmes obligatoires, certains assurés bénéficient de tous les soins préventifs à un coût relativement minime pour la caisse commune; d'autres, et ce sont ordinairement les plus nombreux, préfèrent attendre que la nature les avertisse par la douleur qu'il est temps de réhabiliter leur bouche à un coût maximum pour cette caisse. Il n'y a donc pas de répartition équitable du coût, puisque les bonnes volontés paient la même prime que les négligeants.

Les systèmes facultatifs sont plus équitables: chacun reçoit en soins à peu près pour la valeur de sa contribution.

3—Dans les systèmes obligatoires il se perd des montants fabuleux à traiter des individus qui n'attachent aucune importance aux soins dentaires.²⁷

Dans les systèmes facultatifs, le coût est moindre car la prévention prime sur la réhabilitation.

4—Les systèmes obligatoires favorisent les négligeants; on les évalue par le nombre de souffrances soulagées.

Les systèmes facultatifs favorisent les bonnes volontés; on les évalue par la diminution des maladies dentaires et le nombre d'adhérents aux soins préventifs que les bien éduqués s'imposent volontairement.

EN RÉSUMÉ:

- 1—Les soins dentaires à paiements anticipés sont des systèmes par lesquels une ou plusieurs personnes contribuent un certain montant périodiquement à une organisation ou caisse commune, en vue d'obtenir au besoin des soins dentaires.
- 2—Dans ces systèmes, les soins préventifs périodiques sont de plus en plus à l'honneur.
- 3—Ces systèmes tendent de plus en plus à favoriser les enfants, mais peuvent graduellement s'étendre à toute une population bien éduquée.
- 4—Les systèmes facultatifs semblent avoir certains avantages sur les systèmes obligatoires.
- 5—La profession dentaire, tant au Canada qu'aux Etats-Unis, a fait une étude sérieuse de cette question et recommande l'établissement de soins dentaires à paiements anticipés sur une base facultative, non lucrative et expérimentale.

CONCLUSION:

Nous espérons que l'exposé que nous avons fait aura pour effet de promouvoir cette idée chez un plus grand nombre de personnes, afin qu'elle germe et produise bientôt un plan pilote expérimental de soins dentaires à paiements anticipés au Canada, et si possible dans notre province. Appuyé sur une éducation intensive d'Hygiène Dentaire Publique, il nous semble qu'il y a possibilité de succès.

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Le lieutenant-gouverneur de la province de Québec s'intéresse à la chose dentaire



Photographie prise au cours du premier congrès dentaire provincial tenu aux Trois-Rivières, au début de juin 1955.

On remarque de g. à d.: L. P. Dubé, président de la Société de Stomatologie de Québec; Léon Carpentier, président de la Société Dentaire de Montréal; Gaspard Fauteux, ancien dentiste, lieutenant-gouverneur de la province de Québec, flanqué de ses deux aides-de-camp; son Honneur, le Maire des Trois-Rivières, Me Léo Leblanc, N.P., Roland Baribeau, président de la Société Dentaire des Trois-Rivières, Conrad Godin, des Trois-Rivières.

Problèmes d'allergie en stomato-odontologie en relation avec les matériaux dentaires (suite)

par le Pr Max SPRENG (Bâle)

Les granulomes dentaires ne contiennent pas tous des bactéries et ne résultent pas seulement d'actions infectieuses. D'autre part, il est certain que la plupart des granulomes dentaires sont la conséquence de traitements radiculaires, c. à d. de l'obturation radiculaire avec des corps étrangers. C'est ici que se pose une question spéciale: jusqu'à quel point la formation de granulomes résulte de l'action même du corps étranger et jusqu'à quel point des actions d'antigènes, du côté de ces différents corps étrangers, entrent en ligne de compte. Puisque des réactions identiques peuvent résulter de stimulations très différentes, on ne s'égarrera guère en considérant le granulome, cette néoformation tissulaire, issue de bourgeonnements vasculaires et de formations cellulaires, outre les autres possibilités de son développement, aussi du point de vue allergique, c. à d. comme une forme de réaction allergique.

De même alors, il conviendrait, quant au processus de l'action lointaine, d'impliquer des possibilités de réaction allergique, dans laquelle des allergènes, tant primaires que secondaires (par ex. par décomposition des matières obturatrices radiculaires et formation de substances inflammatoires) entreraient en ligne de compte. En outre, il faudrait aussi songer à la sensibilisation à longue échéance par des matières obturatrices radiculaires, dépôts permanents de corps étrangers dans l'organisme, même si ces matières sont supportées tout d'abord sans réactions. La formation d'un granulome ne constituerait même pas une condition indispensable.

Pour la genèse des granulomes, il faudrait, selon cet exposé, admettre, outre les actions bactériennes, également les actions substantielles des matières obturatrices radiculaires, ou la combinaison des

deux, de même qu'une inflammation tissulaire allergique.

La genèse du granulome n'est pas encore éclaircie jusque dans ses subtilités. Nous manquons, en particulier, d'expériences, de tests et de la connaissance suffisante des corrélations entre les manifestations lointaines et les granulomes, au point de vue des relations allergiques. Avant tout, on n'a pas approfondi si, d'un foyer dentaire, une sensibilisation peut s'effectuer par des nocivités bactériennes et, en particulier, substantielles, donc par des matières obturatrices radiculaires. Par contre, l'observation et l'expérience cliniques ont fourni la preuve que des foyers odontogéniques peuvent provoquer des affections générales et organiques.

Bien sûr, on connaît aussi quelques phénomènes cliniques qui indiquent des relations allergiques, par ex. l'apparition de manifestations cutanées à la suite de traitements radiculaires. Les indications d'une composante allergique ne s'infèrent néanmoins que de la doctrine allergique comme telle et, par analogie, des observations et recherches sur d'autres actions de substances utilisées en bouche sur les dents, pour des motifs divers, ou de matériaux prothétiques.

On connaît des sensibilisations pour le mercure, provoquées par des obturations à l'amalgame (*Misch, Herrenknecht, Sidi, Spreng, Markov* — citées d'après Sidi).

Sidi cite le cas d'un eczéma (au visage, aux mains, aux avant-bras et aux jambes) entrete nu sans aucun doute par des obturations à l'amalgame. De même, nous citerons une urticaire (sensibilisation pour le mercure) qui, selon les données de *Markov*, se produisait à la suite d'applications d'amalgame. On possède aussi la preuve des relations entre des exanthèmes de différentes parties de la peau (visage, cou, poitrine, oreilles, mains,

pieds) et des alliages dentaires situés dans le milieu buccal et qui se manifestèrent durant des années (*Spreng*, observations depuis 1938). *Sidi* indique l'observation d'un eczéma généralisé, entretenu par le port d'une prothèse d'acier-chrome-nickel.

Des observations ont été fréquemment publiées, selon lesquelles, grâce à l'extraction de dents atteintes de granulomes, des eczémas et d'autres affections cutanées se guérissent. Tous les essais d'explication expriment l'opinion que la guérison s'opère par l'ablation du foyer d'infection. On serait néanmoins autorisé à prétendre que l'allergisation directe par des matières obturatrices radicaires même, respectivement par leurs transformations au sein du canal radicaire ou leurs réactions avec les tissus péri-apicaux, pourrait se produire.

Nous nous trouvons ici en présence de problèmes d'allergie, dont l'éclaircissement serait facilité par une collaboration entre le dermatologiste et le stomatologiste possédant les connaissances indispensables des matériaux. On pourrait même ajouter que, en ce qui concerne les subtilités de l'action des corps étrangers dentaires incorporés au milieu buccal (par ex. action cancérogène ou possibilités d'allergisation), un vaste champ d'activité s'ouvre à la recherche, qui dépasserait sensiblement les limites du spécialiste en stomato-odontologie dans maintes questions de ce problème.

C'est précisément là que l'on constate, combien peu une spécialité peut se confiner dans son domaine propre, et à quel point la science médicale et la science médico-dentaire en particulier, s'enchaînent et se confondent.

L'utilisation, si répandue au cours des dernières années, de matériaux synthétiques artificiels, en particulier de matériaux prothétiques, en remplacement du produit naturel qu'est la caoutchouc, a considérablement amplifié les problèmes d'allergie en stomato-odontologie. Il s'agit des acrylates, dérivés du verre-plexi (éther méthylique de l'acide polyméthacrylique), avec adjonction de colorants et d'accélérateurs de polymérisation.

Ces substances, employées pour la confection des plaques de prothèses, manifestent surtout leur nocivité au contact de la muqueuse palatine, comme aussi par des symptômes subjectifs.

Cliniquement, on constate, lors d'actions substantielles au niveau de la muqueuse, palatine (caoutchouc, résine synthétique, acier inoxydable), une rubéfaction de la partie correspondant au pourtour de la plaque prothétique, qui contraste fortement avec la muqueuse saine. Histologiquement, ces altérations vont de pair avec une inflammation chronique, non spécifique (cellules: surtout des lymphocytes, plasmocytes, en outre des leucocytes, parfois avec accroissement des éosinophiles, des histiocytes, des cellules géantes); en outre, des transformations d'épithélium en épithélium atypique peuvent s'y allier. Celles-ci peuvent subsister longtemps, même après la suppression de la cause nocive, bien que sous une forme atténuée, jusqu'à la réversion du tissu. D'autres observations montrent que, malgré la guérison superficielle à la suite de l'élimination de la substance irritante, l'infiltration cellulaire inflammatoire persiste encore longtemps sous l'épithélium. On peut même se demander si elle ne risque pas de devenir définitive sous l'influence mécanique de la prothèse. On est dans le doute quant à la corrélation possible de tels foyers locaux d'inflammation chronique avec l'organisme ou certaines de ses parties. Bien qu'on sache que le tissu ne réagit pas de façon autonome, mais en liaison avec l'organisme, notre connaissance des corrélations entre les inflammations locales (par ex. inflammations palatines) et l'organisme est incomplète.

Quant à la possibilité de formation d'allergènes secondaires au sein de ces inflammations délimitées, particulièrement aussi sous l'influence d'actions mécaniques (appareils prothétiques), on ne saurait, sur la base de nos connaissances actuelles, formuler que des hypothèses. Néanmoins, ces problèmes sont aussi intéressants du point de vue stomato-odontologique que du point de vue de la médecine générale.

Sous l'influence des matériaux non supportés par le patient, des symptômes subjectifs peuvent, mais ne doivent pas se produire, parallèlement aux phénomènes inflammatoires décrits. Ces symptômes subjectifs peuvent même se manifester seuls, lors d'actions de substances (allergie de contact, excitations électriques de matériaux métalliques) sans qu'on puisse constater extérieurement d'altérations de tissus. Nous n'avons pas examiné, au moyen de fragments excisés, si des phénomènes inflammatoires se produisent dans la muqueuse sous-épithéliale sans qu'on puisse les remarquer du dehors. Par contre, ces symptômes subjectifs s'allient assez fréquemment à des altérations de la sécrétion salivaire (diminution jusqu'à la sécheresse, accroissement jusqu'au ptyalisme).

Les symptômes subjectifs se manifestent principalement sous forme de sensation de brûlure de la muqueuse, allant du pharynx jusqu'aux lèvres et pouvant devenir intolérables, en outre, de sensation de soif et de démangeaisons cutanées.

En ce qui concerne l'obtention de tests, on peut dire que le procédé le meilleur est l'examen en bouche (organe de choc) au moyen de revêtement de la prothèse avec de la feuille d'or ou d'autres matériaux. (Le test de la feuille d'or s'opère comme suit: les surfaces de la prothèse qui entrent en contact avec la muqueuse sont revêtues de feuille d'or; le diagnostic "allergie provenant d'une substance contenue dans le milieu buccal" s'établit par l'anamnèse, le cours clinique et le contrôle spécial de la disparition des manifestations ou de leur réapparition au contact renouvelé de la substance soupçonnée).

Des tests cutanés, pratiqués de diverses manières avec des substances prothétiques, ont eu un résultat le plus souvent négatif.

* * *

Considérés au point de vue médico-biologique, deux problèmes principaux se posent quant à l'introduction en bouche de corps étrangers: premièrement, celui de la possibilité d'influences cancérogènes par ces substances après un séjour pro-

longé en bouche, et, deuxièmement, celui de l'allergisation. En ce qui concerne la possibilité d'influences cancérogènes par des substances introduites en bouche, on peut, jusqu'à présent, seulement dire que les matériaux dentaires peuvent constituer une source d'irritations susceptibles de devenir à la longue permanentes pour les tissus buccaux. Cependant, il n'a pas encore été démontré clairement qu'il y aurait relation directe entre la formation d'un cancer en bouche et l'influence de matériaux dentaires. Par contre, des recherches effectuées avec différentes substances synthétiques font entrevoir la possibilité expérimentale d'influences cancérogènes (Turner 1941, Druckerey et Schmahl 1952, Oppenheimer cité par Druckerey). Des recherches expérimentales avec des matériaux synthétiques dentaires ne sont pas parvenues à la connaissance du rapporteur.

Par contre, nous disposons d'un matériel considérable d'observations, acquis par des fragments de muqueuse palatine excisés sous des plaques de prothèses, qui avaient provoqué des irritations chroniques de la muqueuse. Jusqu'à présent ce n'est que par analogie avec la production expérimentale de carcinomes par des moyens chimiques, ou par l'expérience que l'on possède sur les cancers de professions chimiques, qu'on pourrait inférer si des substances prothétiques et autres matériaux dentaires sont susceptibles d'exercer une vaste action cancérogène. Il existe encore de grandes lacunes dans l'examen biologique des matériaux dentaires. Les problèmes stomatodontologiques d'allergie ne découlent pas surtout des manifestations allergiques des muqueuses buccale et linguale, telles qu'elles se produisent à la suite d'états nutritifs allergiques et d'actions médicamenteuses secondaires comme aussi de l'usage d'élixirs dentifrices, de pâtes dentifrices, de cosmétiques ou de médicaments utilisés pour les traitements dentaires, de désinfectants et d'ingrédients spéciaux. La particularité des problèmes allergiques provient de ce que des corps étrangers, en tant que matériaux dentaires, sont incorporés pour long-

temps ou à demeure, à l'organisme et, par suite du contact permanent, peuvent devenir la cause de sensibilisations et de manifestations allergiques locales ou lointaines.

En particulier, il faut prendre en considération les possibilités d'allergie provenant de substances en bouche et apparaissant sous forme de sensibilisations, respectivement de manifestations allergiques

- 1) par des matières obturatrices radiculaires comme antigènes, respectivement haptènes;
- 2) par des produits de désagrégation ou de transformation des matières obturatrices radiculaires au sein du canal radiculaire ou de ces produits dans le tissu comme allergènes exogènes secondaires;
- 3) des allergènes bactériens, comme aussi des produits de désagrégation ou de transformation par action bactérienne comme allergènes endogènes secondaires, provenant des foyers (granulomes);
- 4) des produits d'inflammation sous l'influence d'action mécaniques, par ex. de prothèses, comme allergènes endogènes secondaires.

Tandis que pour 1) des preuves cliniques existent, 2), 3) et 4) constituent des hypothèses sur les possibilités probables d'allergisation sur la base d'action focale bactérienne ou substantielle.

- 5) Sensibilisation pour le mercure par des obturations à l'amalgame (observations *Misch, Herrenknecht, Sidi, Spreng*);
- 6) manifestations cutanées allergiques (eczéma) par des obturations à l'amalgame (*Sidi*);
- 7) inflammations allergiques de la muqueuse buccale (*allergie par contact*) surtout au palais dur (substances: caoutchouc, résines synthétiques, acier dit inoxydable, alliages de métaux précieux de structure *inhomogène*, observations *Spreng* depuis 1938);
(Patho-histologie: inflammation chro-

nique, non spécifique, par excitation, parfois alliée à des atypies épithéliales plus ou moins prononcées);

- 8) actions lointaines provenant de la bouche: peau (exanthèmes métalliques: visage, cou, poitrine, bras, jambes, *Spreng*); urticaire: par caoutchouc prothétique, *Stern*; estomac-intestin (caoutchouc, *Falk, métal, Spreng*); formation d'oedèmes (caoutchouc: visage, yeux, lèvres, glotte, *Stern*; métal: muqueuse naso-pharyngienne, *Spreng*); trouble du sens de l'équilibre (métal, *Spreng*).
- 9) symptômes subjectifs: sensation de brûlure à la muqueuse et à la langue, sensation d'étranglement et de pression à la gorge, soif intolérable, sensation de chaleur, goût de métal, nausées (d'après des observations de l'auteur).

Pour la solution des questions en suspens touchant les problèmes stomato-odontologiques d'allergie, la collaboration avec d'autres spécialités médicales est indispensable. En particulier, il est probable qu'un contact plus étroit entre dermatologistes et stomato-odontologistes serait très utile. Des allergisations par des matériaux dentaires, provoquées par des alliages introduits dans le milieu buccal, peuvent, comme le prouvent des observations de manifestations cutanées par l'auteur, devenir des réactions s'étendant sur des années et occasionnant au patient de graves tourments. Seule la découverte de la cause en bouche et sa suppression amènent la guérison.

Des actions de corps étrangers en bouche n'ont pu, jusqu'ici, être empêchées et l'éclaircissement des subtilités des phénomènes de réaction est encore incomplet. En présence de cette situation, il convient d'exiger avec insistance un examen plus approfondi des matériaux dentaires au point de vue médico-biologique.

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Le plan de la Ligue d'Hygiène dentaire du Québec*

par GUSTAVE ROCHON, D.D.S., Montréal

C'est la sixième fois qu'un dentiste paraît à cette tribune au cours de cette année. On pourrait se demander le pourquoi de cette invasion de l'école d'hygiène par notre profession. Pour éclaircir bien des conjectures, je viens vous exposer le plan de la Ligue d'hygiène dentaire du Québec qui a voulu nous faire spécialiser en hygiène publique en vue de la réalisation de ce plan.

La Ligue d'hygiène dentaire est un organisme indépendant, consacré à l'éducation du public en hygiène dentaire et qui est née de la profession elle-même, sous la pression d'un besoin urgent. Déjà, il y a trente ans, le Collège des Chirurgiens-dentistes de la Province de Québec se rendait compte de l'ignorance complète de la majorité de la population en ce qui concerne l'hygiène dentaire. Consciente de sa responsabilité envers le public et désireuse de rendre les meilleurs services possibles, la profession fit alors des tentatives d'éducation en hygiène dentaire. Cependant, faute de fonds et d'une organisation adéquate, ces efforts restèrent spasmodiques, irréguliers et passagers car on ne pouvait compter que sur les secours fournis par le Collège lui-même ou, occasionnellement, sur la commandite, pas toujours souhaitable d'un fabriquant de pâte ou de brosses à dents.

En 1939, les Drs Jean Brault et Armand Fortier proposent un premier embryon de corps organisé et, en 1942, naît la Commission d'hygiène dentaire de la province de Québec sous les auspices du Collège des chirurgiens-dentistes. La Commission fit un travail méritoire bien que nécessairement limité puisqu'elle ne pouvait compter, en tout et pour tout que sur le seul Collège qui avait bien d'autres obligations. Aussi, pour donner plus de liberté

et d'envergure au mouvement, la Ligue d'hygiène dentaire du Québec fut fondée en 1945, comme organisme indépendant et incorporée comme telle à Québec.

Comme celui de la Commission, le but de la Ligue est l'enseignement et la diffusion des principes d'hygiène dentaire. Malgré que le budget de la Ligue fut aussi limité, elle a jusqu'à présent abattu beaucoup de travail: causeries bi-hebdomadaires à la radio qui s'adressent surtout aux femmes enceintes et aux jeunes mères, publications dans les journaux, dépliants et littérature qu'elle tâche de diffuser le plus possible, entre autres "La mère canadienne et son enfant" correspondance avec les auditeurs et les lecteurs à qui il est offert de répondre à toute question concernant l'hygiène dentaire. Cette correspondance dépasse huit mille lettres par année.

Nous n'avons pas de chiffres statistiques précis qui permettraient de nous rendre compte exactement de l'importance du travail accompli, mais les dirigeants de la ligue ont constaté que, s'il existe encore une ignorance bien grande des plus élémentaires principes d'hygiène dentaire, l'intérêt de la population est éveillée et qu'une œuvre d'éducation et de propagande, menée dans tous les milieux de la province, aussi bien dans les centres urbains que ruraux, était non seulement indispensable mais se révélerait certainement très fructueuse. Cet éveil de l'intérêt porté à l'hygiène dentaire fait qu'on consulte davantage le pédiatre et le dentiste sur les moyens à prendre pour aider les enfants à se former une dentition saine et qu'on fait, plus souvent, réparer les dents des enfants plutôt que de les faire extraire. A Montréal, dans les cliniques de la Ville, il y a quelques années, on faisait une obturation contre quatre extractions. Aujourd'hui, la proportion est renversée.

*Séminaire présenté à l'Ecole d'Hygiène de l'Université de Montréal.

Cependant le problème reste en entier. Le Dr Groulx, chef du service médical de Montréal, pouvait dire récemment que le problème de l'hygiène dentaire était le plus grand problème d'hygiène publique et le plus urgent. Les maladies dentaires et en particulier la carie, peuvent, en effet, être considérées comme hors de contrôle: leur incidence est de 98% dans notre population et, pour chaque obturation complétée, il se produit quatre caries nouvelles. Il n'est pas surprenant que le découragement finisse par s'emparer du pauvre patient et même du dentiste devant ce flot sans cesse grandissant de carie et qu'on en soit presque venu à considérer le dentier comme la troisième dentition normale.

C'est ici que la Ligue d'hygiène dentaire entre dans une nouvelle phase de son activité. L'attitude réceptive de la population, de nouveaux subsides, lui permettent d'élaborer un nouveau plan pour tâcher de venir au secours de la population, attaquer le mal à sa base et contribuer pour sa part à reprendre le contrôle des maladies dentaires.

De ce plan nous verrons le but, ensuite nous en verrons l'organisation et les attributions du personnel préposé à son fonctionnement, enfin, les moyens employés pour atteindre le but.

Le but du nouveau plan de la Ligue reste celui qu'elle s'est toujours donné même si elle se propose de l'étendre sur une plus grande échelle; c'est d'essayer d'obtenir la prévention et le contrôle des maladies dentaires et de promouvoir la santé dentaire par un programme d'information et d'éducation.

L'éducation en hygiène dentaire demeure donc toujours le seul but de la Ligue d'hygiène dentaire et c'est le seul moyen d'action mis à la disposition de ses propagandistes. Il est vrai que le champ en est vaste et que, en outre, c'est encore elle qui a donné les meilleurs résultats en hygiène publique.

Les points qui feront la base de l'enseignement au public, vous ont été exposés ici même par mes confrères dentistes du D.H.P. En effet, le programme s'attachera à promouvoir une bonne nutri-

tion, base de la santé en général et de la santé dentaire en particulier. Les bons effets d'une alimentation balancée chez l'enfant et les effets néfastes d'un des hydrates de carbones raffinés seront l'objet d'une attention toute particulière. L'importance des dents temporaires, qu'on appelle maintenant, en anglais "basic teeth" est une partie importante du programme d'éducation. Nous tâcherons d'en faire valoir la valeur tant au point de vue fonctionnel qu'au point de vue orthodontique. Nous essayerons d'inculquer la connaissance des principes d'une bonne hygiène dentaire: bonne mastication, hygiène de la bouche, visite régulière au dentiste pour la correction précoce des défauts dentaires.

Enfin, pour aider à ces mesures indispensables, nous préconiserons, là où ce sera possible, la fluoruration des eaux d'alimentation. Là où cette mesure se révélera impossible, on pourra y substituer la fluoruration topique des dents.

Voilà donc le but que se propose la Ligue: continuer son enseignement et l'intensifier, en voilà, en gros le programme de ce qui fera l'objet de son enseignement. Pour remplir adéquatement ce programme, il lui faut une organisation, il lui faut du personnel qualifié.

La base de cette organisation existe déjà: ce sont les cadres de la Ligue d'hygiène dentaire du Québec, composée de son président, Dr Gabriel Lord, de son secrétaire, le Dr Ephrem Vinet, de son bureau de direction et de ses membres. Le projet en voie de réalisation prévoit qu'on ajoutera à ces cadres des dentistes qualifiés en hygiène publique à qui seront confiés des territoires déterminés et dont le rôle sera d'intensifier et de promouvoir davantage l'éducation en hygiène dentaire. Ces hygiénistes devront délaissier toute pratique active de la dentisterie et se consacrer entièrement à leur rôle d'éducateurs. Ils se verront confier la tâche de mettre en oeuvre le programme énoncé plus haut. Leurs principaux moyens d'action seront ceux de tout hygiéniste, c'est-à-dire en premier lieu le "survey" qui consiste en l'examen des dents des enfants et la compilation des

résultats. C'est là, en effet, un moyen précieux de connaître l'état de santé dentaire de son district, d'en connaître les besoins immédiats, de prouver la nécessité d'un programme d'hygiène élaboré et c'est, en outre, un point de comparaison future très important. L'hygiéniste aura ensuite à préparer et à donner des conférences basées sur ses constatations et sur les besoins de son district. Le choix de l'auditoire à l'occasion de ces conférences sera traité plus loin. Enfin, tous les moyens de propagandes à l'usage de l'hygiéniste, en autant qu'il pourra s'en servir et qu'ils pourront servir à son but seront employés: journaux, dépliants, films, radio, je n'ose nommer la télévision, seront mis à profit et serviront à appuyer sa campagne.

Il est curieux de constater que pour procurer le bien de l'humanité on doit employer les mêmes moyens publicitaires que les compagnies qui ne cherchent que leur propre profit matériel, mais l'expérience a prouvé qu'une campagne d'hygiène habilement menée, d'une manière analogue à la réclame, donne des résultats inestimables. L'hygiéniste doit donc faire sien la cause de la santé publique et en faire la réclame comme s'il devait en tirer lui-même un profit quand ce ne serait que celui du devoir accompli.

Ce programme de la Ligue d'hygiène dentaire s'adressera tout d'abord, comme il se doit, à l'enfance. Le cas des adultes est, en général, réglé et il reste peu à faire pour améliorer ou corriger leur situation dentaire. Il ne s'agit pas, cependant de s'adresser directement à l'enfant. Les hygiénistes, pour la plupart ne sont pas qualifiés et n'ont pas la grâce d'état du pédagogue. Il faut donc s'adresser à l'adulte qui a le plus d'influence sur l'enfance.

Un programme comme celui-ci doit nécessairement prévoir la correction précoce des défauts dentaires. Or on sait, par expérience, que c'est à son bureau que le praticien peut rendre les meilleurs services professionnels. C'est donc aux dentistes de son district que l'hygiéniste s'adressera d'abord. Soutenu par le Ministère de la Santé et par le Collège des den-

tistes, il cherchera à obtenir la collaboration entière de ses confrères. C'est à eux qu'incombera le devoir de faire le travail de correction chez les enfants, ils devront épauler et approuver le travail d'éducation de l'hygiéniste. Le rôle de celui-ci vis-à-vis de ses confrères sera de les soulager d'une grande partie de l'éducation, qui demande du temps de la patience et qui est très peu efficace, quand il s'adresse à des individus. Il leur demande, en retour, d'accepter de traiter leurs jeunes patients, de leur consacrer, s'il le faut, des heures spéciales comme cela s'est fait ailleurs. Il s'adressera à eux au sein de leurs associations, s'il en existe dans la région, et tâchera de les grouper s'ils ne le sont pas. Un programme d'hygiène dentaire est inconcevable sans la collaboration de la profession et doit fonder sur elle ses espoirs de réussite.

La dent, et, en général, la bouche est une partie du corps humain et sa santé est en relation étroite avec la santé générale comme elle contribue elle-même à la santé de tout l'individu. La collaboration du corps médical nous est donc indispensable et surtout celle des médecins hygiénistes. C'est à lui que s'adresse d'abord la maman soucieuse de la santé de son bébé et c'est lui qui lui adressera les précieux conseils de nutrition qui influenceront aussi sa santé dentaire future. La plus étroite collaboration avec les unités sanitaires, la compréhension des problèmes réciproques, la coopération dans un idéal commun devra donc être préparée et accomplie par l'hygiéniste dentaire.

Une classe professionnelle qui fera l'objet d'une attention toute particulière de la part des hygiénistes dentaires, c'est la classe des éducateurs de l'enfance: instituteurs et infirmières. L'instituteur, par son influence directe sur les écoliers peut faire plus que quiconque dans un programme d'éducation. L'infirmière, qui pénètre dans les familles, atteint plus facilement les mères et les enfants d'âge préscolaire. Leur aide et leur enseignement nous seront donc inappréciables et c'est un point du plan de la Ligue d'hygiène dentaire de désigner un hygiéniste dont la

principale fonction sera de demander cette collaboration en faisant de l'éducation dans les écoles normales, scolasticats, séminaires et même, éventuellement, les écoles d'infirmeries des différents hôpitaux de la province.

Pour résumer, on peut dire que la mauvaise dentition, est, dans notre province, presque proverbiale. La population y souffre de malnutrition parce qu'on ne peut plus mastiquer que des matières molles faute de dents et les étrangers qui nous visitent ou viennent demeurer parmi nous sont toujours surpris du nombre effroyable de dentiers qu'on y rencontre dans les classes des moins de vingt ans. Les extractions précoces nuisent au développement normal des maxillaires et rend souvent l'harmonie des traits faciaux impossible.

Cependant, on peut déjà prédire avec certitude qu'un jour viendra où les gens devront à leur propre effort l'avantage de posséder une denture saine. C'est à ce résultat que tend l'éducation populaire. La situation dentaire actuelle est due à la civilisation. C'est son mode de nutrition factice qui en est la plus grande cause. L'homme possède d'abord des dents saines, il est donc logique d'assurer leur développement normal et de les protéger contre les maladies dont elles peuvent être l'objet. Les recherches scientifiques effectuées au cours des dernières années ont permis aux dentistes de faire usage, à cette fin, de méthodes d'hygiène dentaire dont l'efficacité est maintenant reconnue. D'autre part, un programme d'hygiène dentaire ne peut vraiment être réalisé

sans l'appui populaire. Il est donc indispensable de lancer, dans ce but, une campagne d'éducation destinée à convaincre tous les gens de l'importance de l'hygiène buccale. Les efforts déployés jusqu'ici dans ce domaine ont d'ailleurs été fort encourageants et ont, plus d'une fois, démontré l'extrême utilité des campagnes d'éducation populaire. C'est donc dans ce but que la ligue a mis sur pied son plan d'éducation. Ses grandes lignes sont nécessairement, au début, assez élastiques: elles laissent le champ libre à tout autre plan qui devra le compléter: pratique privée, cliniques d'hygiène dentaire publiques, soins dentaires à paiements anticipés, se réservant l'éducation publique et s'organisant pour en obtenir les meilleurs rendements possibles. D'autre part, notre travail sera absolument inutile si nous n'obtenons pas l'approbation et la collaboration des professionnels de la santé: dentistes, médecins, infirmières, éducateurs et surtout celle des hygiénistes de toutes les classes. Nous comptons donc que tous et surtout vous, hygiénistes, qui comprenez l'importance que peut avoir le problème dentaire sur la santé publique, nous accorderont leur appui comme ils pourront compter sur le nôtre. Avec votre collaboration, nous sommes convaincus que notre programme fera de nous un peuple aux dents saines au lieu d'être comme aujourd'hui un peuple de déficients dentaires, mutilés, souffrant d'incapacité masticatoire ou, au moins, d'incapacité partielle. Nous pourrions obtenir, dans notre population, une santé dentaire supérieure même à celle du reste du Canada.

Nouvelles de l'Association

Faits saillants du congrès de Toronto

- Le congrès de 1955 a été le plus considérable de toute l'histoire de l'Association. Les inscriptions ont atteint le chiffre de 1700, dont 1189 dentistes.
- Le docteur R. R. McIntyre, de Calgary, a été élu président pour le terme 1955-56 et le docteur K. M. Johnson, de Winnipeg, président-élu.
- Le docteur Harold Keith Box, de Toronto, a été nommé membre honoraire.
- On a offert au docteur H. K. Box son portrait à l'huile; celui-ci l'a remis à l'Université de Toronto. De plus, le Bureau des Gouverneurs a approuvé la fondation d'une bourse d'études qui portera le nom du docteur Box.
- On a approuvé un programme d'éducation sur les affaires de la dentisterie en faveur des membres.
- On a endossé une campagne pour le diagnostic précoce du cancer.
- Le Bureau des Gouverneurs a demandé à l'Exécutif de poursuivre ses démarches pour obtenir la déduction à même le revenu taxable des sommes versées pour un fonds de retraite.
- On a désavoué l'incorporation de l'exercice dentaire.
- On a approuvé une recommandation pour que les octrois provinciaux soient de \$25.00 par tête.
- On a adopté une résolution pour inciter fortement les autorités universitaires à établir des cours pour des hygiénistes dentaires.
- On a approuvé avec plaisir l'organisation de cours de pédagogie à l'intention des professeurs d'universités.
- On a élaboré les règlements pour approuver les internats dentaires.
- On a recommandé la tenue de "Semaine de Santé dentaire" pour les provinces qui ne les organisent pas encore.
- On a décidé que les renseignements donnés en faveur de la fluoruration ou de toute autre mesure du même genre seraient seulement d'un caractère éducatif.
- On a recommandé que la profession donne son appui aux techniciens qui respectent les lois.
- On a fortement recommandé l'utilisation des services des hygiénistes dentaires, tout en condamnant les principes énoncés dans le plan des infirmières dentaires de Nouvelle-Zélande.
- On entreprendra en 1959 un relevé sur l'économie de l'exercice dentaire.
- On a recommandé que les assistés d'état reçoivent des traitements dentaires adéquats, d'après un plan bien conçu.

—On a adopté une déclaration claire réitérant la recommandation de fluorurer l'eau des aqueducs publics.

Décision du Comité d'Etiquette professionnelle

En réponse à une demande précise d'un membre de l'Association, le Comité d'Etiquette professionnelle a fourni la réponse suivante:

"Le Comité croit qu'il convient que le nom, l'adresse et le numéro de téléphone d'un dentiste attaché au service des clients d'un hôtel apparaissent seulement dans le bottin principal de l'hôtel ou dans les chambres d'hôtel; et non pas dans d'autres endroits ou dans d'autres genres de bottins d'hôtel.

Le Comité ne croit pas qu'il convienne que ces inscriptions paraissent dans des bottins utilisés hors de l'hôtel particulier où les services de ce dentiste sont disponibles."

"Facts on Fluoridation", 3e édition, 60 pages

On est à reviser une nouvelle édition de ce pamphlet et celui-ci sera disponible prochainement. On peut en obtenir une copie gratuitement. Pour certaines quantités, .25, par copie. Il faut écrire à l'Association dentaire canadienne, 234 rue St-Georges, Toronto.

Notes sur la fluoruration

Le 17 mai dernier, le Conseil métropolitain de Toronto a voté en faveur de la fluoruration de l'eau de l'aqueduc. Le grand Toronto compte 1,250,000 habitants groupés dans quelques treize municipalités. Immédiatement après la décision du Conseil métropolitain, une des municipalités (Forest Hill Village) a pris des mesures légales pour bloquer ce règlement.

On annonce que la ville d'Halifax fluorurera son eau de consommation à partir de l'an prochain. L'appareillage nécessaire a déjà été commandé.

Sillery, une banlieue de Québec, avec une population de 12,800, a approuvé la fluoruration. C'est la deuxième ville de Québec à adopter cette mesure; l'autre municipalité est Pointe-Claire.

L'Ontario augmente son octroi

A la dernière réunion annuelle du Collège Royal des Chirurgiens-Dentistes de l'Ontario, tenue du 24 du 27 mai dernier, on a décidé d'augmenter la cotisation des membres à l'A.D.C. Pour 1955, la cotisation sera \$20.00 par membre et pour 1956 et les années qui suivront, de \$25.00. Le docteur W. J. Dunn a été embauché comme assistant-secrétaire du Bureau d'Ontario et il entrera en fonction le 1er septembre.

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The treatment of infected root canals by ionophoresis, expansive filling, and diadynamotherapy*

by PAUL DIONNE, B.A., D.D.S., Joliette, Quebec.

In the treatment of necrotized pulps and periapical inflammation, the removal of the tooth is too often considered as final rather than as a medium. Today, with the evolution of dental science, we should consider this medium as quite primitive, as a mutilating operation very often useless. The curettage of the apex, less mutilating, is rather limited. It remains then the radicular treatments, which have proven a certain efficiency, especially for the accessible canals with the various anti-biotics. However, this presents some difficulties: the multirooted teeth with inaccessible and aberrant canals. This is the problem that is helped today with the apparatus of Dr. Pierre D. Bernard, of Paris. Ionophoresis solves

the problem of radicular penetration in root canal therapy. It makes possible the penetration of medicaments into the normal and accessory root canals we cannot find. It insures the disinfection of inaccessible root canals and any apical secondary canals, and prepares the lysis of organic debris, indispensable to permit the complete filling of branching canals.

To understand this technique very clearly, let us study first the process of Ionophoresis and the related phenomena. In the treatment with electrolytic medication, as with Churchill's Iodine (ionization), an electrolyte iodine (I^3) of strong concentration is substituted for the electrolyte NaCl already existing in the canals. These ions I^3 penetrate thoroughly in all the canals since the penetration is necessary to let the current go through.

*This article is a translation from the French section of April 1955.

But the application is of long duration. With the Ionophoresis-Integrator, the application is of short duration and is done without interposing a medicated electrolyte. It is a new electrolyte without relation to the dental field, which is created electrolytically and which forms negative ions called OH ions, which are free ions and very very active.

IONOPHORESIS

The negative electrode (a barbed broach) is placed in the pulp chamber, and the positive electrode constituted by a metallic cylinder is held in the patient's hand. The current goes then in the canals in the following manner: the body's sodium chloride NaCl derived from the moisture in the root canal, is composed of sodium ions Na^+ and chlorine ions Cl^- ; consequently the chlorine ions Cl^- are repulsed toward the apex. The sodium ions Na^+ are attracted toward the negative electrode, we have then two ion currents going in opposite directions. Na^+ ions upon reaching the negative electrode lose their positive electric charge and become atoms, that is to say metallic sodium (primary electrolysis). But the sodium in contact with moisture reacts by decomposing the water and gives: $\text{HOH} + \text{Na} = \text{NaOH} + \text{H}$ (hydrogen) (secondary electrolysis).

From this caustic soda, new electrolyte, is formed: 1) positive Na^+ ions which will be again attracted to the negative electrode where they form again sodium hydroxide, and 2) hydroxide ions OH^- (negative) which move in the direction of the apex and are substituted for the Cl^- ions in the contents of the canal. Thus the negative electrode in the canal's contents, is a source of OH^- ions which form at the contact of the negative electrode and penetrate immediately into the canals. These OH^- ions which are "bactericidal" have a penetration speed five times faster than the iodine ions I^- , consequently an application five times shorter. (One to three minutes instead of five to fifteen minutes.)

The action of the OH^- ions on the neighbouring components is a third manifestation of electrolysis. The OH^- ions aid in cleansing the canals by "disintegrating the albuminoid molecules by making them more simple and soluble; by saponifying the fatty acids; and causing the dissolution of the calcium salts of the dentinal walls, and this on a very restricted layer of the dentine". (Bernard) It is a veritable electro-chemical opening that gives a better access. But we must bear in mind that we cannot exclusively rely upon the action of the OH^- ions, and that we must take care to clean well and prepare the canals mechanically. We must take the same precautions in this method, as in any other, for the opening, enlarging and cleansing the canals. But the advantage of Ionophoresis will assure a more complete cleansing and especially in the case of inaccessible and aberrant canals.

Finally the OH^- ions, apart from being bactericidal, are "bacteriolysers" because instead of simply killing the virulence of the micro-organisms, they cause the liquefaction of the microbic content of the canal. This is better than an antiseptic action. In other words, the content of the canal no longer constitutes culture medium. (May be considered as a fourth action of electrolysis.)

"In vitro" experiments were conducted as follows: a mixture of gelatin, water, NaCl and a few drops of phenolphthalein in alcohol is used as a matrix in which an extracted tooth is embedded. The negative electrode is placed in the canal and the positive electrode is applied to the matrix. On applying the current from the ionophoresis apparatus, we can see the precise moment that the hydroxy ions arrive by the colour of the matrix changing to red at the various foramina of the root, both apical and lateral. (The phenomenon showing the presence of hydroxy ions.) We can see the exact periapical field reached by the hydroxy ions. When the red agglomeration appears along the root, it reveals the existence of accessory

canals. Here is another phenomenon we do observe: the Na ions which come from the apex toward the pulp chamber are hydrated so well that a pulp chamber almost dry, becomes progressively moist during the application. This electro-osmosis is called *cataphoresis*. The conjunction of the cataphoresis and of the liberation of hydrogen produces an electrolytic foam. This foam must be checked during treatment, and the excess absorbed on a cotton pellet; otherwise it would overflow the cavity and give a leakage of current to the gingivae. The cataphoresis and the liberation of hydrogen has an effect of mechanically cleansing the canal. Because of this, it is recommended not to force the electrode nor to place it too far into the canal, to avoid obstruction; otherwise the pressure due to the hydrogen produced will drive the debris out into the periapical area and this even before this region is sterilized by the hydroxy ions. An important precaution is not to use a smooth broach as an electrode in the canal, but a barbed one that should enter freely, to give room for the expulsion of the debris regurgitated. The introduction of the negative electrode should be progressive in the canal so the sterilization will start from the pulp chamber and gradually reach the apex, thereby affecting progressive sterilization.

In canals where penetration is possible only for a short distance, the application of the current will gradually open up the canal through the albuminoid's lyses. If the canal cannot be detected at all, a pellet of cotton impregnated with a solution of NaOH (sodium hydroxide) at 20% will be placed in the pulp chamber and the electrode placed onto this moist cotton, which should not be overly wet. Eventually the entrance to the canal will become detectable with a smooth broach.

When the electrolytic foam, which is a real caustic soda, is sufficiently abundant to fill the canal, it causes the cleansing and the sterilization of the cervical part of the canals. If it is insufficiently abundant (which is however of no importance

to the apical ionophoresis) the cervical part of the canals and the pulp chamber remain septic so that a smell of gangrene may remain and worry the practitioner who immediately believes that he has failed, where as a matter of fact the whole apical zone of the canals is disinfected. A culture test taken from the canals would be positive and this would indicate a failure, and this would be erroneous because if we fill the canals properly, the cervical septicemia does not lead to reinfection of the apex, and the cure is normal. But this acrobatic technique which consists in treating the apex, neglecting the proximal portion is in no way advisable. Therefore we must first, even before the application of ionophoresis, clean thoroughly the chambers and the accessible canals mechanically and chemically with a sodium solution. If a canal is too narrow for this process, we must not, in this case, force the electrode too rapidly to reach the inaccessible part. On the contrary, we must place the electrode at the opening of the canal to insure the disinfection of the opening and to penetrate it gradually according to the production of OH ions, their penetration and the eventual electro-chemical cleansing of the canal. Then a culture test would prove to be negative.

If we introduce an antiseptic into a canal with a paper point, we have only a vague notion of the quantity of the medicament used; but with ionophoresis the phenomena of electrolysis are determined with mathematical precision. In this manner the amperage can be defined by the quantity of electricity—called Coulomb—which is produced in one second by converting 1.118 mg. of a silver salt to metallic Ag by electrolysis. One decicoulomb (the 1/10th of one coulomb) produces 0.0414 mg. of sodium hydroxide NaOH, or 1 centigram of 4% solution. So the application of 4 decicoulombs is the equivalent to an injection of 4 centigrams solution of sodium hydroxide at 4% or in a definite manner 8/10 of a drop. (20 drops to 1 cc.) The dose of

electrolysis and of the ionophoresis is the exact measured quantity of electricity applied and this is done by an apparatus called integrator. (Electro-mechanical control.)

The patient's tolerance to the current varies from one tooth to another; the sensations are determined by the density of the electric-current. The tolerance can be augmented if one uses during a few seconds (15 to 20) a diadynamic current in addition to the ionophoresis. We feel that ionophoretic treatments are definite in their quantitative administration and in the certainty of their being well distributed in the tissues. We naturally have to ascertain that there is no possibility of diffusion of current outside of the root canal. If it happens, it can be well detected because the diffusion becomes erratic; the diffusion is too much accelerated to be limited to the passage into the root canal.

Let us emphasize again the importance of the use of a barbed broach for the diffusion of the ionic current. If one does not leave sufficient space around the electrode, there will be a stoppage of the canal and the debris will not be drawn out by the nascent hydrogen directed towards the pulp chamber. The stoppage will be of an irritating nature, if allowed to continue, because of compression of the pulp stump at the apex. The Na and H ions and the lysed organic debris must have access to the pulp chamber.

(SPECIAL CASES)

1. The apical lesion involves two apices, two teeth involved or the two root canals of the same tooth can be treated at the same sitting to obtain the sterilizing effect of the OH ions.
2. A lack of tolerance to the current from the very start indicates that the root canal still contains a live pulp. The only procedure is to give local anaesthesia, remove the remnant of the pulp still there, and give the current during anaesthesia.
3. In certain fistulae one can observe a persistency of the fistulary discharge which

is a source of a secondary focus. This untreated focus can reinfest the periapical zone before it heals. Two means of treatment are recommended:

- (a) Ionophoresis and Ionization. A copper electrode on the positive end with a wire well insulated, uncovered only in its extremity. This extremity is introduced to the extent of 1 to 3 millimeters in the fistula. The negative electrode is still in the dental canal; hence, the penetration of the OH ions in the canal will take place but the copper electrode will ionize itself and emit green copper ions which will penetrate secondarily in the fistula, through a concomitant reverse process. The fistula is thus sterilized in all its length and its cicatrization is rapid.
 - (b) If the canal is already filled, the metallic cylinder (positive electrode) is then held in the hand, and a smooth broach (negative electrode) is introduced in the fistula, 1 to 3 millimeters and only 2 decicoulombs are necessary for the penetration of the OH ions in the fistula.
4. A broken instrument is in the canal. Most probably a barbed broach, which leaves a certain amount of passage along its barbed surfaces. Ionophoresis can be applied with no particular precautions. The OH ions will go past the broken instrument and will have a tendency to loosen up the hard tissue which holds it in the canal. In many instances this softening will make it possible to remove the broach.
- A treatment by Ionophoresis well done must always proceed without the least discomfort. If a reaction occurs, it is due to a bad diagnosis or a poor technique. According to the pathologists, we know that the dental pulp may die in two ways: first, by *acidosis*, that is by an infection which causes the change of the content of the pulp chamber, normally organized and alkaline, into a one which is disorganized and acid, that, sooner or later, reacts in the periodontal field (this is called a real infection); and now the second way, by *alcalosis*, that is by being hyper-alkaline which is incompatible with existing pathogenic microbes, while maintaining however normal living conditions

indispensable to the cells and also to the tissues. Though rare, the alkalosis affections are to be dreaded when using ionophoresis. The alkalosis, which are the result of a basic degeneracy of the pulp, give symptoms identical to those caused by acidosis or infection, but they are without microbes. They must be suspected whenever the pulp dies spontaneously and without any decay, apparent or beginning, or more precisely whenever the death of the pulp is due to an aseptic pulp degeneracy. For instance by frequent and repeated micro-traumatism or by insufficiently isolated obturations. Their treatment must be acid. A treatment by Ionophoresis according to the usual technic of the OH ions would cause, in such cases of alkalosis which are already hyper-alkaline, too great an alkaline condition. Therefore it is of the utmost importance at the very beginning to give an acid treatment, a chemical cleansing using hydrochloric acid diluted at first, then a phoresis of H ions which will neutralize the alkalosis. The process of this ionophoresis of H ions is very simple. The H ions can be obtained by the electrolysis of the physiological content of the canals. But two conditions are required: (1) place the *positive* electrode in the tooth; (2) use as the electrode a *platinum* needle. Thereby the sodium chloride is divided and the chlorine ions Cl become atoms at the contact of the positive electrode and give with water the following formula: $2\text{Cl} + \text{HOH} = 2\text{ClH} + \text{O}$.

A platinum electrode is indispensable because otherwise if the broach is of a corrosive metal, the chloride which is deionized at the contact of the positive electrode, becoming atomic chlorine, may attack the metal of the electrode and produce a salt of this metal. After the application of the H ions, the treatment is not ended. We must wait till the acid-basic equilibrium is obtained, at least an hour. Then another ionophoresis application, but this time with OH ions is necessary and the most interesting results are ob-

tained by calling in, in the afternoon, for a treatment of OH ions, a patient treated in the morning with H ions.

Now, the therapeutic results are in direct relationship with the perfect use of ionophoretic process. However the canals must still be filled properly. The root canal filling substances which will be permanently in the neighborhood and even in contact with the periapical tissue must be favorable to biological activity and allow the generation of bony periapical tissue. When using the OH ions technique, it is advisable to fill the root canal permanently after the first and only treatment. Having reached the point where we want to fill our canal, sterilized absorbent points are used to remove the foam that has formed in the canal.

RADIOCALEX

The disinfection of periapical tissues has always retained the attention of the research men while the regeneration has been left to nature. Moreover the medicine used has left the tissues further weakened to be confronted with regeneration. According to Drs. Joly and Lenfant, "healing of osseous lesions due to endodontic infections is an important problem and this healing can be obtained much more quickly than usual if the organism immediately receives the proper nutriment. The use of endodontic paste (filling material) containing, in judicious proportions, calcium hydroxide and glycogen, allows a notable acceleration of the osseous restoration. At the same time it allows a systemic neocementary calcification of apex apertures".

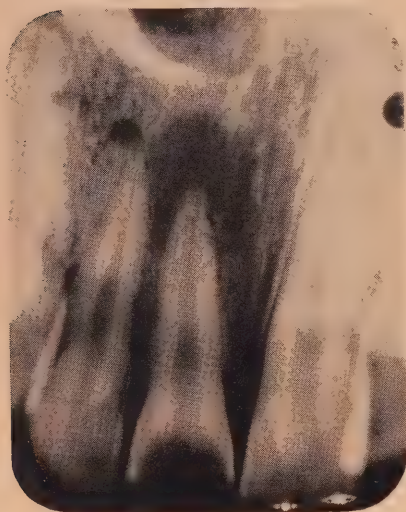
But let us remember that the calcium hydroxide is for the decalcified periapical zone a complete food which tends to be resorbed and entirely devoured if perchance it does not expand and when the lesion is considerable. In case of calcium which does not expand, we are obliged to renew the paste at the end of ten to fifteen days. Radiocallex which expands, becomes an important alkaline and calcic stock and generally sufficient. What is important, is to note that this material

becomes hydrated and fluid in the wide canals whereas in the small canals it is condensed on the walls, becomes more dense, and will cause the calcification of the dentinal tubuli. So it is advisable, in the wide canals, and when the total expansion is obtained, to remove the paste that is still fluid, and replace by material of usual fillings. (Gutta-percha, zinc oxide, cement, etc.)

The oxide of calcium changes its status to calcium hydroxide when subjected to the water content of the canal. $\text{CaO} + \text{H}_2\text{O} = \text{Ca}(\text{OH})^2$.

As another advantage, this material is a vehicle of glycogen towards the apex which allows the organism to transform rapidly the lime which is supplied into bony mineral material. Glycogen is a normal constituent of all tissues which, at the very moment of the calcification, deposits itself in important quantities on the matrix which is calcifying. In the mechanism of the calcification we already know that there are two simultaneous and very distinct actions: the attraction

or affinity and isolation of Ca^{++} ions and PO_4^{--} -ions (calcium and phosphorous), the union of which assures the formation of the fundamental tricalcium-phosphate $(\text{PO}_4)^3\text{Ca}^3$. The plasma of the blood constantly carries Ca^{++} ions, and because the union of the Ca^{++} and PO_4^{--} -ions must be done in the liquid state, of which the pH must be above 8, it is therefore required that the Ca be presented in the form of $\text{Ca}(\text{OH})^2$. Every calcic substance to be assimilated during the process of reossification must be able to be transformed easily into $\text{Ca}(\text{OH})^2$. The calcium hydroxide constitutes a reserve of OH ions capable of prolonging the ionophoresis and maintaining in the periapical tissue a pH favorable to the healing process. It is to be noted that $\text{Ca}(\text{OH})^2$ is insoluble and also that the expansion is due solely to the absorption of a water molecule into the calcium oxide. Therefore, should moisture either from a defective cement seal or from the apex reach the canal filling, no dilution will occur. I would, however, advocate plug-



CASE No. 1. 2 years of chronic infection.



Treatment result six weeks later.



CASE No. 2. Periapical infection with fistula.



Radiograph of treated tooth 8 weeks later.



CASE No. 3. Granuloma, Fistula. Treated by ionophoresis and ionization. Radiograph of treated tooth six months later.



All these results required no more than three diadynamotherapy treatments



CASE No. 4. Canal obliterated with Radiocalcex and gutta-percha.

ging gutta-percha points into the calcium hydroxide paste to ensure a tighter union to the walls of the canals and give more definite radio-opacity as evidence of a well filled canal.

DIADYNAMOTHERAPY

To complete the ionophoresis treatment (direct current) the action of which is essentially antiseptis, Dr. P. Bernard had added to his instrument "diadynamic therapy" which permits the stimulation of the tissues affected by atrophy. Diadynamic current is an electric current very peculiar in its form, a synthesis current of a new conception. While direct current, as used by ionophoresis does not act upon the tissue metabolism, *sinusoidal* current is the only one to be able to increase considerably the respiratory exchange of the tissues. The other currents of low frequency as Faradic and Exponential cannot give you the same result unless applied at painful intensities, for the length of the curves resulting from those currents in their zone of action are not-

ably shorter than those of sinusoidal current.

Diadynamotherapy is a dual type of low frequency current used also as an analgesic. It acts rapidly in checking pains caused by trauma or oedema following inflammatory and infectious conditions. Our present aim is to advise its use in accelerating the regeneration of osseous structure in treated apical areas. Diadynamic therapy is based on a "modulated and short period" type of current. We are looking for the stimulation of the atonic tissues and alleviation of the deficient trophic condition.

To cause dynamogenic effects the applications should be of short duration, one or two minutes at a time, in one second intermittent dosage, the first, the third and the fifth day after ionophoresis. A second series of applications can be given ten days later or so. The intensity should be limited between the threshold of perception to that of pain. A strong vibration is sought without any undue discomfort. Therefore the amount of current varies with each patient, whose co-operation is required to define the best level of current. Whereas the galvanic current in ionophoresis carried the ions into place, these curative possibilities stop there. It takes a low frequency modulated and superimposed type of current to stimulate tissue metabolism given in one to three minutes total application during which time, one second on, and one second off, to cause definite acceleration of repair tissue formation.

Repair tissue is definitely apparent by X-Rays taken only two to three months after the filling of root canals, and compares favorably with eight to twelve months in an otherwise normal case not submitted to this treatment.

As other indications in odonto-stomatology, the diadynamotherapy is spectacular in the instantaneous alleviation of painful dry-sockets, arthritis, facial neuralgia and trismus. It is also a precious aid in the alleviation of the "tic dou-

loureux", sprains and wry neck, and finally, to the stimulation of tissues in the gingival atonic conditions, and helps to consolidate loose teeth after treatments for periodontal disease.

The whole procedure used to disinfect as outlined above is threefold: first a treatment by Ionophoresis; second the perfect filling of the canals; and finally, a more rapid cure by diadynamic therapy.

Devital pulpotomy*

by H. W. HELM, D.D.S., Vancouver, B.C.

Indication for Devital Pulpotomy.

A vital primary molar with moderate carious pulp exposure, with or without history of recent spontaneous pain.

Such a tooth is likely to continue to lose its vitality under more conservative treatment, yet need not be sacrificed while still vital.

Contra-indications for Devital Pulpotomy.

1. Necrotic pulp — with or without fistula.
2. Extensive and prolonged carious exposure.
3. Acute pulpitis with sensitivity to percussion.
4. Apical or bifurcation pathology evident in radiograph.
5. Root resorption, physiological or pathological.
6. Extensive loss of crown, or, caries extending deeply onto root.
7. Patient in poor physical condition.
8. Patient with definite allergy.

STEPS IN DEVITAL PULPOTOMY

1. Periapical and Bitewing X-ray of the tooth. Pulpotomy should be predicted from X-ray.
2. Rubber Dam to include only tooth to be operated on.

3. Commence cavity preparation in usual way, being sure to remove all coronal caries before opening into pulp. Be sure there is adequate occlusal access.
4. Remove roof of pulp chamber with 700 or 701 fissure bur.
5. Sever pulp fibres at coronal portion of root with Number 4 Round bur. Avoid perforating at bifurcation.
6. Flush with water spray using 6-inch cotton roll to absorb excess water.
7. Dry pulp chamber with cotton pellet. If hemorrhage is encountered:
 - (a) Use some form of haemostatic agent, water, adrenalin, etc.
 - or
 - (b) Pack with wet cotton pellet tightly and complete cavity preparation after which hemorrhage will have been controlled.
8. Make fairly stiff mix of Oxpara paste, pressing tightly into place with slightly dampened cotton pellet. Use sufficient to cover pulp stumps adequately.
9. Place firm layer of oxyphosphate cement and finish as regularly prepared base unless steel crown is used when oxyphosphate cement is not required as entire cavity is filled with Petralit.

10. Place restoration or steel crown.

* Inter-City Paedodontia Study Club, presented to Vancouver Dental Society, Feb. 1, 1955.

The importance of the study of occlusion to the practice of dentistry

by THOMAS J. LUBY, D.D.S., Montreal

SECOND PRIZE ESSAY War Memorial Award Competition

The scathing attack on American Dentists delivered by William Hunter in 1909 and reasserted by Rosenow in 1931 are excellent examples of the prejudices which the dental profession must combat through the use of reason and scientific explanation. Until the general public is more thoroughly aware of the complexities which affect oral health, the general need for its maintenance will go unnoticed, and the profession will still be open to further criticism. Early achievement of this end dictates that each practitioner must be capable of clearly emphasizing to his patients the prevention of dental disease with the main purpose in view of promoting, preserving and maintaining the physical health of the individual patient and the general public. In an attempt to provide additional impetus to patient education this paper is presented.

Ginn defines occlusion as "the position of the teeth when the jaws are closed". Herewith, we are presented a relationship between the opposing arches, and the factors which establish this relationship must be scrutinized. How does this relationship come about, and what are its determining factors?

EVOLUTION AND ADAPTATION:

The process of evolution is one in which the form best fitted to the physical environment survives. The epic work of Darwin in 1859 presented the concept which deals with inborn native differences. This insight, coupled with earlier

work done by Lamarck on those differences among men induced by environment, i.e., acquired characters, are a starting point for investigation. These, and subsequent studies have shown that from earliest known man to present day specimens, there is a constant tendency to develop that form which can carry out most efficiently the required function in the particular environment. Gregory and Kieth have been foremost in this field. Their studies of the remains of early man show a transition in tooth form and they relate this to the development of his brain. The increase in brain size gave man power to extend his scope. He could adapt himself as his living conditions fluctuated. His diet was adapted to his way of life and became an omnivorous one, and with this, gradual refinements appeared in his teeth and fascies, resultant of underlying bone and muscle adaptations to this type of diet. Klatsky and Fisher observe: "In the evolution of man's masticatory apparatus, there has been a retrogressive diminution, in the size of the cuspid. This has been advantageous in that it permits lateral, forward, and back, as well as the up and down movements of the lower jaw, thus facilitating more efficient chewing of the food". The change in size and form of the cuspid teeth and the gradual emergence of an articulate temporomandibular joint are taken by Gregory to be the dividing line which separates early man from the lower primates. Here it is well to point out that all dental diseases and deformities are not due to the

changes consequent to the natural process of evolution as many persons are inclined to believe. Such beliefs act as deterrents to any efforts made to broaden the program of dental prevention. Such thinking readily continues reliance in old stereotyped operative and prophylactic procedures which make little or insufficient attempts at restoration of use and proper function of the masticatory apparatus.

MYOFUNCTION AND BONE RESPONSES:

Fich introduced a classification of muscle physiology which we are familiar with as isometric and isotonic contractions. Isometric is a contraction without muscle shortening, the effort producing tension, while isotonic contraction produces muscle shortening and no tension. When teeth are not in contact, the action of the muscles of mastication is isotonic. When a bolus of soft food is introduced between the teeth, the force necessary to move the mandibular teeth through the food is not very great. However, when the food is hard, or the teeth are in contact (occlusion) heavy stresses are set up resulting in great tension being produced upon the teeth, and the underlying bone via this isometric contraction. The state of development and health of any muscle is dependent upon the degree and frequency of its function. A lack of function decreases the size of the muscle and increases its fat content, a condition which adversely affects its contractile strength. The change from the fugiferous diet with its hard, bulky and rough components to a softer omniferous type has produced a diminution in size and power of the muscles of mastication. The reduction in the ability of the tensile components of the jaw has had its effect upon the size and form of the underlying bony structures. Modern man does not have the gross maxillary and mandibular bones or the large supra orbital eminences which prevail in the skulls of ancient man.

Bone is dominated and controlled by the muscles which are attached to it.

The size, shape and other characteristics are definitely governed to a great extent by the size, shape, and degree of function of its controlling muscles. As Wolff's law states, the external form and internal structure of living bone is determined by the muscular forces exerted upon it. Weinmann and Sicher point out that "the increase in any physical tolerance acts as a growth stimulus on bone. Decrease of functional stresses leads to atrophy". Baker has produced deformities in the maxilla and mandibular bones by interfering with masticatory function on one side of the mouth by means of unilateral extractions thus disrupting bilateral muscular balance in chewing. Pratt demonstrated that removal of the masseter muscle caused underdevelopment of the mandibular ramus. Washburn, Horowitz and Shapiro demonstrated upon rats that modification of outer form and internal architecture were produced by removal of the temporal muscle. From this, we can surmise that serious alterations in the shape and structure of the masticatory apparatus appearing during the growth and development of the human body can be abnormal directives of heredity, environment and function, applied to muscle action.

THE DYNAMICS OF TOOTH FORM AND FUNCTION:

Comparative anthropological studies made by Hooton and Waugh in their examination of skulls and the mouths of contemporary primitive and civilized peoples tend to show that the teeth of the average ancient and primitive peoples indicates a greater incidence of attrition than do the teeth of the average modern civilized people. The jaw bones of the former and their muscles of mastication, show a superior quality and greater efficiency than those of the latter. This is due to the greater use and the better function that the masticatory organs of the primitives were subject over that of modern man. The physical nature of the food eaten by man of today,

the methods of its preparation and consumption are thus indicated as being responsible for the deplorable dental conditions existent today.

According to Granger: "Articulation is an orderly movement of the teeth upon each other in every contacting position. From the pure shearing action of the incisors, through the combined tearing and milling of the bicuspid, to the milling action of the molars, the form and position of these contacting surfaces are determined by the movements of the temporomandibular joint. That is the reason for the parabolic form of the cusps, and the irregular form of the fossae and sulci. The dynamic requirements of tooth form to maintain this contact throughout the ever varying range of jaw movements from the straight protrusive to the pure lateral excursions with the infinite variety of intermediate lateral protrusives, presents a definite pattern or chain of cusp relationships, varying in detail with the oral physiology of the individual. In a theoretical, ideal dentition, in straight protrusive, the incisors meet edge to edge, the tip of the lower first bicuspid rests upon the crest of the lingual surface of the upper cuspid, the tips of the remaining buccal cusps of the lowers contact the crest of the parabolic curve on the inner aspect of the upper buccal cusps; and the tips of the upper lingual cusps contact the inner aspect of the lower lingual cusps. In pure lateral excursion, the buccal cusps on the working side glide laterally over the marginal ridges and pass between each other, while at the same time on the balancing side, the lower buccal cusps contact the upper lingual cusps. In extreme lateral protrusion, the cusps on the working side make tip-to-tip contact at their greatest height". From this it becomes apparent that each cusp bears a definite relation to all the cusps in any particular mouth. One cannot haphazardly or arbitrarily create tooth forms at will, but must relate the

forms and positions to the dynamic requirements of each individual.

Evolution has presented man with a masticatory apparatus which is capable of multiple cusp contact for all positions possible within the chewing range of the mandible. The fact that a large percentage of modern civilized people do not exhibit complete bilateral balance is no evidence that man was not intended to have same.

THE TEMPOROMANDIBULAR JOINT AND OCCLUSAL BALANCE:

Miller tells us that "a misconception of the natural anatomy of the temporomandibular articulation has been the basis of incorrect diagnosis, and what is more unfortunate, incorrect treatment of dental irregularities. The fallacy has been that the mandibular condyle head in its relation to the mandibular fossa of the temporal bone, presented a uniform arrangement of close approximation with the deep roof of the fossa, like that of a ball and socket". The investigations of McCollum, Schier and Higley have shown that upon initial opening movements, there is a hinge action in the condylar heads and that the hinge axis is the axial center located in the head of the condyle, constant to the mandible which determines the axis on which the teeth meet in every contacting position of the mandible. Further opening of the jaw is accompanied by a downward and forward movement of the condyle in a combined gliding and hinge action. The articular disk moving with the condyles adapts itself with the change in condylary position compensating for surface imperfections on the condyles and articular eminences. Lateral excursions are accomplished by hinge and glide movement on the balancing side while the condyle rotates anterolaterally or may rotate on a vertical axis on the working side. Between the condylar paths and the lingual surface of the maxillary anterior teeth as well as the mesio distal planes of the posterior teeth, a certain harmony natur-

ally exists. Disruption of the relationships of the teeth in function through occlusal alteration may produce pathological change in the joint structure. The importance of congruous muscle action is not to be overlooked either, since joint movement is dependent on it.

An anatomical consideration of the joint itself can be obtained in Spalteholz's Atlas of Anatomy. Breitner in his experiments on alveolar bone changes as a result of applied orthodontic force in which the relationships in tooth position were altered, found that upon histological examination definite changes had taken place in the condyles and in the glenoid fossa, as well as in the expected areas of the angle and around the teeth repositioned. On the basis of this, it becomes evident that disruption of occlusal balance can well effect joint changes, and vice versa. The institution of treatment directed at alleviation of occlusal disfunction alone becomes an all advised procedure.

THE INVESTING TISSUES OF THE TEETH:

Klatsky and Fisher tell us that "Periodontal disease is hard to diagnose by the examination of skull collections, but these skulls show that dental caries, malocclusion, and other pathological conditions and abnormalities, while they were found in some skulls of ancient and prehistoric man, their incidence has constantly been increasing with the advent of modern civilization brought about by a lack of use and function due to the change in the physical and textural consistency of the food which we consume". Miller and Glickman have compiled texts dealing with the etiology and treatment of periodontal disease. Box, McCall and Sorrin have discussed traumatic occlusion as a factor in periodontoclasia. On the surface of this problem, the existence of two opposing factors, hypofunction and hyperfunction being contributory may seem paradoxical. However, when we consider the teeth themselves as being the cutting tools of

the masticatory apparatus, the alveolar bone, as the handles of the tools all put in motion by the chewing musculature, then the integrity of the tool-handle attachment is evident. The periodontium constitutes this attachment, and its biological limits are not extreme. Hypofunction produces a chain of events which atrophies the attachment. The loss of efficient attachment due to degenerative changes preludes tooth loss and thus a disruption of the masticatory status quo. Hyperfunction is function beyond the physiological capacity of the attachment. The attachment is modified according to the individual biological limits, but once these limits are exceeded, destruction ensues, the end result parallels that of hypofunction. Black in 1895 attributed the controlling factor of biting strength not to the power inherent in the masticatory muscles, but the condition of the periodontal membrane supporting the teeth. O'Rourke amplified this statement by demonstrating that the pain threshold for the periodontal membrane constituted a ratio to the total possible muscle power, the use of which was reduced by deleterious conditions of the teeth, malocclusion, malnutrition and systemic disease. A lowering of the threshold of periodontal sensation thus leads to faulty habits of mastication. Manly and Shiere found that those who had a greater biting force expressed a preference for tougher foods than did those with a lesser degree of biting force. The tolerance to masticatory stress is reduced by inflammation of the periodontal membrane and a loss of osseous support, factors which lower pain threshold. It is therefore incorrect to evaluate a masticatory apparatus merely in terms of teeth present. Much depends upon the condition of the supporting structures since muscular action with its integrated influence will not be used to full effort, in the presence of a faulty periodontium.

SUMMARY:

The great incidence of dental disease

and abnormality in modern man leads many observers to associate these degenerative changes with organic evolution. They are tempted to consider it as an attempt on the part of Nature to undermine the health of the teeth, which will ultimately result in their partial or complete elimination, since our civilized methods of preparing food tend to oblivate the necessity of mastication. This makes it necessary for us to study organic evolution and then consider its possible impact upon our teeth.

The general evidence deduced from a study of the evolution of the human dentition does not bear any tangible evidence to support the somber view that our teeth are undergoing drastic evolutionary changes leading to complete degeneration with the ultimate disappearance of many or all the teeth from the human mouth. On the contrary an increase in man's brain size brought about a dietary change which was reflected in a diminution of his cuspids resulting in more complex movements of his lower jaw and an increased function of his temporomandibular joint.

The growth and development of the jaw bones, and the muscles which activate these bones, are dependent upon the function and the exercise to which they are submitted during the process of mastication. The consistency of the diet is that factor which renders function and exercise to this physiological process. A coarse diet necessitates vigorous chewing movements, and in this way, an important contribution to the maintenance of healthy teeth and strong supporting structure is made. Refinements in food and its preparation have brought a decrease in use to the masticatory muscles and the impact of this is seen in the changes in bone size of the face and jaws.

Tooth form and function have been evolved to present man with a masticatory apparatus which is capable of multiple cusp contact for all positions possible within the chewing range of the mandible. The shape and position of each tooth is dependent upon the forces applied to

them by the muscles of mastication transmitted through the bone and the dietary constituents.

Proper temporomandibular joint function is dependent upon occlusal relationship of the teeth. Loss of this relationship results in abnormal muscular stress upon the joint itself with concomitant degenerative changes therein. The increased complexity of masticatory action is reflected in the refinements observed in joint make-up and function when comparing skulls of ancient and modern man.

The status of periodontal disease cannot be compared on an evolutionary basis; however, the integrity of the investing tissues about the teeth is reflective of the maximum effort possible by the masticatory musculature. This effort has direct bearing upon the growth and development of the fascies, the temporomandibular joint, the bones of the face and the dynamics of tooth function.

CONCLUSIONS:

It was stated that form was modified by function of the organ itself. This was traced by a study of skull collections. The modifications which became evident resulted in increased efficiency of the organ function. Changes in tooth size gave increased excursive activity to the mandible bringing about additional masticatory efficiency. Concomittant with this, temporomandibular joint modifications became evident permitting even more refinement in masticatory action. The change in form or size of an organ is principally due to addition, subtraction, or transposition of the histological elements of which it is composed. Such changes are due directly to the amount of physiological wear and repair, use and disuse which the organ sustains.

We are all well aware of the extreme variability of human beings in form as well as function. In many individuals, the mandibular joint, once it has reached its adult form, is adaptable but unchangeable. This is attested to by the many examples of individuals whose occlusion

was in harmony with condylar movements and as a consequence had lost teeth. On the other hand, there are also evidences in daily practice of instances where, even though the movements of the teeth did not harmonize with movements of the condyle within the glenoid fossa, the teeth and surrounding structures remained strong and healthy and no joint abnormalities were manifest. It is impossible to deny the changes in the temporomandibular joint in face of the histological evidence which has been presented and the clinical evidence which is daily observed. However, the prosthodontist, the orthodontist, and the periodontist as well, should remember that it is difficult, though possible, to apply forces in their reconstructions that will also materially alter the temporomandibular joint.

In the harder tissues of the body, strain and pressure have also been potent factors in the determination of form. Primitive peoples whose diet through circumstance, contained coarse abrasive elements requiring extensive comminutions gradually developed greater mobility of the jaw. As consequence of this, the pattern of the molar teeth and the structure of the temporomandibular joint became modified, all through strain and pressure. However, the practitioner must bear in mind the implications of pressure not only upon such durable components, but on the plastic features exhibited by bone under such conditions. Bone changes can be accomplished within the life span of one individual whereas other changes in the masticatory apparatus may be manifest only after many generations.

Young adults whose teeth are unworn show contacts consisting of small hard surfaces. The direction of the mandible from lateral contact to centric position is determined almost entirely by cusp angulation rather than by condylar guidance. The movement of the mandible at this stage is limited by the interdigitation and relationships of the cusps. Wide lateral

movements are uncommon. The muscular force may be more powerful, but the cusp inclinations limit that force. At this stage of growth and development of the dentition, there seems to be a struggle between muscle strength and cusp guidance. The musculature seems to pull in a lateral direction while the cusps tend to maintain a vertical direction.

Later in life as the cusps are worn through use, the excursions of the mandible become more closely approximate to the power of the muscular force. With the attainment of age then, the musculature becomes the predominant factor in the direction of masticatory movements, the teeth in occlusion and the function of the joint being subservient to it. The extent to which the full potential of the musculature can be exercised is limited by the pain threshold of the periodontal membrane. Periodontal disease with its production of low pain threshold portends occlusal dysfunction resultant from muscular disuse. Therefore, if we consider the human masticatory apparatus as it is ideally intended, to be a wheel, the rim being the occlusal aspect of the teeth, the hub as muscular action, and the spokes as periodontal, bone factor, and joint considerations, then the loss or break down of any one part, although it may not initially produce complete failure, the discrepancy being masked by adaptive capacities of the other parts, may come into prominence with age.

The study of occlusion has its importance to the practice of Dentistry in that it can provide the practitioner with further insight into the etiological background of dental diseases. It can aid him in making a more accurate diagnosis, and can produce tangible basis for prognosis. The possibility of suggestion from such study, of methods or more expedient courses of treatment with which to attain desired end results is for the future of the dental profession a strong motivating factor.

There are 28 references.

Case report: Non-union of fractured tooth root

by H. A. HUNTER, D.D.S., M.Sc.D.*

The following report is, perhaps, of interest because it concerns an unsuspected root fracture and explains its subsequent failure to unite.

The patient was a 19-year old girl attending University. The history of her injury was that during an automobile accident her mouth struck the steering wheel with such force that the crowns of both upper centrals and the right lateral

sustained Class III fractures (Fig. 1). The four lower incisors were chipped, but without involving their pulps or causing their subsequent devitalization. The day following the accident the upper incisors underwent pulpectomies and a week later the canals were obliterated. Following completion of the endodontic treatment, each treated incisor was fitted with a gold post and cap, over which was placed a



FIG. 1.

Radiogram following injury. Note degree of crown loss and appearance of incisor roots.



FIG. 2.

Appearance of gutta percha filling the root canal and showing even continuity to canal walls. Lateral condensation has not driven gutta percha into any crack. Lamina dura and periodontal membrane are normal.

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porcelain jacket crown (Fig. 2). The case was considered completed and the patient dismissed. Sixteen months later the patient returned complaining of soreness in the upper right central. A radiogram taken at this time (Fig. 3) showed an obvious separation in the mid-root area that was not detectable at the time of injury. The tooth was extracted intact and appeared as Fig. 4, there being a soft tissue mass growing about the line of fracture that can be seen radiographically in Fig. 3 while the tooth was in situ.

Histological sections were prepared (Figs. 5 and 6) to determine why no union had occurred. In Fig. 5 the conchoidal fracture line runs across the root and the gutta percha filling material can be seen in the root-canal. The soft tissue mass ringling the fracture line can be seen on one side and at least half the gap left by

the displaced fragments is filled with more soft tissue. In Fig. 6, which is a high power of the rectangular area marked in Fig. 5, one can see a lot of loose areolar connective tissue supporting numerous strands of squamous epithelium. In the upper part of the picture there is a collection of pus which is part of the overall acute inflammation present in the tissues and adjacent periodontal membrane, and accounts for the patient's complaint and immediate cause of the tooth's extraction.

The explanation of the non-union of the root fragments is apparent. The injury had stimulated the dormant epithelial rests of Malassez that are present in all periodontal membranes and these had proliferated and grown into the fracture line along with the connective tissue and in so doing, effectively prevented any possibility of the two parts being united by cementum.



FIG. 3.

Sixteen months after treatment. Note separation of root fragments, and rupture of gutta percha. There is loss of lamina dura on both sides and perhaps as a belt all round the root at the fracture level.

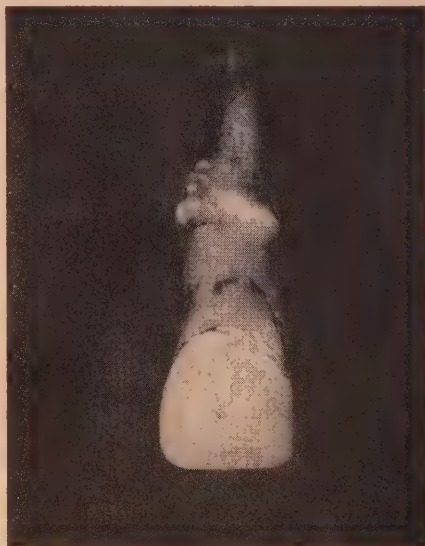


FIG. 4.

Extracted tooth showing belt of soft tissue surrounding root.



FIG. 5.

Section showing separation of root fragments and broken gutta percha filling. Also mass of soft tissue around fracture line and growing into space between fragments.



FIG. 6.

High power of rectangular area marked in Fig. 5.
(a) Loose areolar tissue.
(b) Strands of epithelium.
(c) Purulent exudate.

230 College St. Toronto.

In the progress of science there are two processes at work. In the one there is the steady accumulation of factual knowledge, and in the other there is an attempt to interpret the facts in terms of unifying principles. It is the interplay of theory and experiment which leads to the most important advances, for often the interpretation of one sort of fact leads to the prediction of new results. The most impressive advances are produced when general hypotheses are put forward which bring different branches of science within the same comprehensive scheme.

By John Lennard-Jones.
Journal of Oral Surgery, July 1955.

ABSTRACTS



Temperature rise in teeth developed by rotating instruments.

by F. A. PEYTON, D.Sc., Ann Arbor, Mich.

The Journal of the American Dental Association, June 1955.

Investigations have been made of the temperature that developed in teeth when cut with steel burs, carbide burs and diamond instruments operated at speeds up to approximately 30,000 rpm. Study was made of the effect of air and water spray as coolants in comparison with no coolant, and, in addition, the effect of a half pound and one pound force on the handpiece was observed.

In general, the diamond instrument showed less temperature rise than was

shown by the burs under all comparable conditions of study. The carbide bur generally caused a little less temperature rise in the tooth than the steel bur. Results indicate that a coolant is essential when operating rotating instruments at speeds of 10,000 rpm or above, and of the two coolants studied, the water spray is the most effective. When the water spray was employed, there appeared to be no damage to the tooth from overheating at any speed of rotation of the instruments studied. Further studies would be desirable to determine the temperature rise developed by other rotating instruments such as disks, wheels, or other burs with the same and other coolants applied.

Clinical observations on use of mephenesin in cerebral palsy patients.

by MANUEL M. ALBUM, D.D.S., Philadelphia.

The Journal of the American Dental Association, July 1955.

Mephenesin was used successfully prior to dental operations in 109 cerebral palsy patients. The study extended over a period of one year. The relaxation achieved in these patients who ordinarily are difficult to treat resulted in less apprehension and greater co-operation. With the drug, the patients experienced a feeling of euphoria and well-being. Ninety-seven normal adult patients were given

mephenesin for relaxation prior to carrying out of dental work. Most patients were treated repeatedly (average 4 to 5 times). For the purpose of comparison, medication was withheld or placebos substituted in many instances.

Premedication with mephenesin has distinct advantages both for the patient and the dentist. This is true for patients with cerebral palsy as well as for normal adult persons undergoing dental treatment. The patients are more comfortable and the dentist's work is made easier. Operating time can be extended when mephenesin has been given to patients otherwise difficult to treat. Poor

relaxation was observed in only 15 of the 109 cerebral palsy patients.

Mephenesin is most useful when administered in the elixir form since it acts more promptly; it is preferable to tablet or capsule form for the cerebral palsy patient. The onset of action occurs 20 to 25 minutes after administration of the drug and the effect lasts for about 30 to 45 minutes. Side reactions rarely occur. In a few individuals nausea and vomiting occur if the patient has been given a large dose.

The relaxant effect of mephenesin is of use when intraoral tracings of edentulous patients must be taken. Muscles and ligaments of the temporomandibular re-

gion are relaxed and true intraoral readings can be obtained.

The dryness of the mouth or decrease in salivary flow temporarily produced by the mephenesin may be a useful tool for the dentist since a clearer field can be obtained for operation. This will facilitate the insertion of fillings and the cementing of bridgework.

Another pharmacologic attribute of the drug is its local anaesthetic effect. This was observed only with the elixir of mephenesin. It temporarily eliminated the gagging sensation usually experienced by the patient when impressions are taken or intraoral roentgenograms made, or when new dentures are inserted.

Pre-Extraction Records to Avoid Premature Aging of the Denture Patient.

by MEYER M. SILVERMAN, D.D.S., Washington, D.C.

The Journal of Prosthetic Dentistry, July 1955.

The vertical and horizontal overlaps of the anterior teeth of the natural dentition should be reproduced as closely as possible in complete dentures. This duplication maintains the same aesthetics and phonetics as found with the natural dentition and prevents the patient from appearing and sounding older than he should. Those overlaps should be recorded prior to the removal of the remaining natural teeth. The reproduction of these overlaps is dependent upon the establishment of vertical dimension with accuracy, and upon the elimination of all occlusal interferences.

A great number of speech sounds are made by the articulation of the tongue with the upper anterior teeth. This normal relationship should not be changed. If it is necessary to grind the anterior teeth, due to premature contact, it is the lesser of the two evils to grind the lower

teeth. This will have less effect on the phonetics and the aesthetics than to shorten the upper teeth.

In normal dentitions, there should *not* be an interincisal space between the upper and lower incisal edges when the mandible is at its closest speaking level in relation to the maxilla. If there should be an interincisal space, the phonetics as well as aesthetics are affected. This causes unnatural sounds, such as the lisp, or a difference in the normal speech which makes the patient sound like an older person, or at times, juvenile. If old dentures show an interincisal space while the mandible is at its closest level to the maxilla during speech, corrections in new dentures should be made. Assuming that the vertical dimension is accurate, the vertical overlap of the new dentures must be at least equal to the closest speaking space found in the old dentures, and in some cases the vertical overlap is greater than the closest speaking space. This will eliminate any interincisal space while the mandible is at its closest level to the maxilla during speech.

The most forward position of the man-

dible during speech should be recorded.

In normal cases, the forward movement of the mandible during speech is never beyond an edge-to-edge relationship.

The vertical dimension of the natural dentition should be recorded by the closest speaking space for reference and control in the building of complete dentures.

Histologic studies of carious-like lesions produced in the artificial mouth.

by WARD PIGMAN, Ph.D., and RIDAR F. SOGNAES, D.M.D., Ph.D.

Oral Surgery, Oral Medicine and Oral Pathology, May, 1955.

Teeth with carious-like lesions produced under in vitro conditions in the artificial mouth have been sectioned and examined by histologic procedures. Regularly cleansed teeth showed a slight general surface attack; the generalized attack increased greatly with less frequent cleansing. Localized lesions of enamel and of dentine were shown by their enhanced permeability to solutions of toluidine blue.

The histologic examination revealed several microscopic features resembling

This is a physiologic means for measuring vertical dimension while the mandible, with its controlling muscles, is in phonetic activity. The closest speaking space is different from the free-way space which measures the vertical dimension when the mandible and the muscles involved are at complete rest.

natural carious lesions: (1) An accumulation of plaques containing gram-positive microorganisms was demonstrated; (2) The primary penetration of enamel appeared to proceed between prisms, accompanied by accentuation in the appearance of the prisms, the cross striations, and the incremental lines, eventually followed by a loss of surface continuity; (3) Invasion of the dentine occurred along characteristic tracts, indicated by greater permeability to dyes and, eventually, by a loss of tooth substance and cavity formation; (4) A predominance of gram-positive spheroid microorganisms could be demonstrated within distended dentinal tubules, eventually invading the ramifications of the tubules and destroying the intertubular matrix.

Preventive Dentistry and Preventive Orthodontics through Public Dental Health Education.

by LEO B. LUNDERGAN, D.D.S., St. Louis, Mo.

American Journal of Orthodontics, July 1955.

Dental disease is universal and, although only approximately 30 per cent. of the population regularly receive dental service, the value of dental health should be taught to the entire population.

The primary dental health problem is the lack of awareness of its importance.

The potential of a dental health program is difficult to imagine. The full impact of dental disease upon the individual is difficult to estimate. Adverse psychological reactions resulting from obvious dental defects are undoubtedly the basis of a variety of social maladjustments that may continue throughout life. Limited masticatory function, pain, and oral sepsis contribute to impairment of general

health and physical and mental efficiency. Ira Dow Beebe, speaking to the Fourth Annual Conference on Dental Health, estimated that absenteeism, due to dental disease, amounts to 45,000 employees per day.

If all the people with dental defects were to seek dental care, there would not be a sufficient number of dentists to care for their dental needs.

There is no easy solution to the problem of making dental care available to all persons who need dental treatment. Neither is there an easy solution to the problem of providing adequate dental health educational services to all members of the public. These problems are difficult to solve because they involve almost the entire population. It is illogical to assume that adequate treatment and

educational services can be supplied for every person. It is much more realistic to attempt to reduce the size of the problem to a point where community facilities and resources can be applied effectively.

A great deal of progress has been made for dental health education and expanding oral health services. Facilities for providing dental care have increased over the years; people are more interested in dental health than they were in past generations; the dental profession and allied health professions are doing a better job of teaching dental health facts and of improving habit patterns and attitudes.

The job that lies ahead is to continue these improvements and to accelerate the achievements of dental health goals in the future.

Morphology of the Pulp Cavity of the Permanent Teeth.

by DAVID GREEN, D.D.S., Brooklyn, N.Y.

Oral Surgery, Oral Medicine, and Oral Pathology. July 1955.

It is known that pulp cavities vary greatly in size and shape in different races as well as in different persons within the same race. It is also evident that, as growth forces continue, there is a diminution in the size of the pulp cavity, sometimes to a point of obliteration. Teeth may have been affected by decay processes, erosion, abrasion, restorations of varying depths, causing pulp injury, speed grinding, loss of vitality, etc., all of which have a tendency to change the size and shape of the pulp cavity. Nevertheless, morphologic knowledge is indispensable, inasmuch as one is guided in detecting the position of the pulp cavity regardless of size, shape, or position of the tooth in the arch.

Pulp cavities generally conform to the outline of the teeth before the formation of secondary dentine, which usually begins after the teens. From this time to middle age, the laying down of secondary dentine is extremely slow and frequently imperceptible. It is during this period that teeth, which otherwise might be lost, may be salvaged with the least amount of operative difficulty and also with the minimal amount of discomfort to the patient.

An essential supplement to the knowledge of internal dental morphology in endodontics is the studied development of digital dexterity and a definite, recognized procedure and *modus operandi*.

Morphologic knowledge aids the operator in tracing a canal to its termination, thereby increasing his degree of success. The rare unsuccessful case falls in the category of the frailties of the human element of the operator and the rebellion of the patient's cellular elements to injury.

Sugar and Dental Caries

The fluoridation issue has, for many months, received more publicity in daily newspapers than all other aspects of dentistry combined. However for a few brief days, fluoridation was all but forgotten when stories appeared stating that tooth decay was not caused by eating sugar. The source of this somewhat astonishing news was purported to be a recent publication of the Medical Research Council of Great Britain. This report, number 288, prepared by King, Melanby, Stones and Green on the caries experience of children with and without supplements of sugar to the rationed diet over a period up to 2 years has produced results similar to those obtained with adults in the Vipeholm Study in Sweden. In that investigation it could not be shown that the supplements made any appreciable difference in a 2 year period provided that the additional sugar had been incorporated in or taken with the other food and drink. The British report indicates that the investigators were testing the total sugar content of the diet and *not* the effect on caries incidence of sweets taken between meals.

The nature of the study as undertaken by the Research Council was undoubtedly initiated from certain conclusions reached by the late Dr. J. D. King. Upon completion of a small study in 1946, Dr. King concluded that under conditions prevailing in certain institutions dietary supplements in the form of sweets and sugar-

coated biscuits, even when given at bed time, did not increase the incidence of caries.

In the Council's investigation the prime object was to see what relationship, if any, existed between dental caries in children and different levels of sugar intake in diet. The study did not concern itself with the structure of the tooth, conditions influencing the metabolism of the body, or the presence of fluoride as it affects either the chemical composition of the teeth or local conditions in the mouth. When the study was formulated the object was to ensure that, as far as possible, the only difference between the test and control groups was in their *dietary* intake of sugar, refined and unrefined.

The children in the test were given extra sugar with food taken at meals, but the control groups also consumed varying amounts of sugar and other fermentable carbohydrates which included the full sweet, sugar and jam ration, breakfast cereal, and any amount of white bread. As may be imagined, both groups had caries.

It is interesting to read that where the workers in Liverpool found more caries at one age in the sugar group and at another age more caries in the control group they conclude that: "The conflicting age incidence of caries in this centre may be due to the small number of children on whom the results are based. The small number exposed to risk prevents

any definite conclusions being drawn." The Liverpool study had a larger number of children at the end of the test period than either the London or Sheffield investigations.

The lay press however cannot be expected to sift through the earlier portion of the report and it is understandable that they are most interested in the conclusions. This section however does not reflect, as soberly, the actual nature of the results as do the conclusions at the termination of the individual test studies. It is also significant that in these studies the sugar was used in a way which other studies have suggested may produce the least harmful effect, and therefore to deduce from this that sugar is intrinsically harmless is most misleading.

The British Dental Journal in considering this report makes the following observation: "The important conclusion

which may be drawn from the results is this: the freeing of sugar from rationing restrictions such as those in force at the time of the investigation is rather unlikely to be having a detrimental effect on the teeth of well-nourished children where the additional sugar is being taken with food at mealtimes. The results are consistent with the widely held view that sweets or candies are likely to be least detrimental when eaten at meals. Since all children get some sweets and the careful parents often enquire when they can least harmfully be given, we can, with increased confidence, advise that they should not be given between meals but at them."

The attendant publicity, erroneous as it was, was most unfortunate. However the fact remains that those who would utilize this report to discredit the cariogenicity of sugar will, we fear, have to "hitch their wagon to another star."

Book Reviews

The Story of Dentistry. By Dr. M. D. K. Bremner. Published by: Dental Items of Interest Publishing Co. Inc. Pages: 462. Price: \$8.65.

The revised third edition of *The Story of Dentistry* is enlarged considerably and contains some new material to bring the subject up to date. This volume has one outstanding merit in that it tells in story form the sequences and combinations of events in the progressive development of the dental profession. Historical facts in themselves are dry and make tedious reading. As these facts appear in this book, they become enjoyable and informative entertainment.

The book is written in twelve parts and traces the development of dentistry from anthropological studies through the early and middle ages until the present time. Understandably, the text directs its main attention to the development of dentistry in the United States. All aspects of the profession are covered with the author making many elucitatory comments upon the significance of various occurrences.

This reviewer was pleased to note in the preface the following comment: "It (the story form) enabled me occasionally to infer and surmise why or how certain incidents happened. Naturally this is permissible only if the reader is informed so that he will not be mislead into accepting speculations as fact." This comment should be well considered when one reads certain passages in the chapter on Professional Journalism. The author bemoans the demise of *Dental Items of Interest* "because it could not compete with the A.D.A. monthly and its assured circulation which included nearly the whole dental profession." He continues later "Politicians will frequently be able to find space for their papers while the more valuable contributions of men without influence will be gathering dust in editors' desks."

It is most regrettable that the author should imply that editors of association publications are pawns of politicians. As a group, dental editors jealously defend their time-honoured prerogatives and the suggestion that they can be made to perform like puppets on a string is not in keeping with the fine standards of the rest of the text.

The Story of Dentistry otherwise is a splendid book, achieved only after untold hours of painstaking and diligent research. The book merits a place in each dentist's library.

W.J.D.

Open Wider, Please—The Story of Dentistry in Oklahoma. By J. Stanley Clark. 1st Edition. Published by The University of Oklahoma Press, Publishing Division of the University, Norman, Oklahoma. Pages: 391. Price \$5.00.

This book makes clear the implications of a highly successful and valuable program developed by the dental profession in Oklahoma which has stimulated dental practitioners and societies throughout the United States by its progressiveness, its emphasis on constantly improving technical standards, and its farsighted attitude towards human welfare. From the passage of the Act to regulate dentistry by the first Oklahoma territorial legislature, through the introduction of post-graduate courses in 1912 and the teaching of oral hygiene in the public schools in 1914, to the working committee organized in 1954 to promote dental health in the state's mental institutions, members of the Oklahoma dental profession have persistently advocated higher stand-

ards and greater service to their patients and communities.

This book, though undoubtedly of greater interest to the dentists in the State of Oklahoma, should have an interest to other members of the profession practising in other locations as well. It indicates that the professional growth of the dental practitioners in the area parallels the advancement of Oklahoma from territorial status to statehood and development as a progressive state.

W.J.D.

Dentistry As Practised 1800-1921. By J. Menzies Campbell, D.D.S., F.D.S., F.I.C.D., F.R.S.E. Pages 9. Procurable from: Dr. J. Menzies Campbell, 70 Great George Street, Glasgow W.2, Scotland.

This short booklet of some nine pages is of great interest as it presents in a few words the efforts for status and prestige from the British and, more particularly, the Scottish standpoint engaged in by the dental profession. Dr. Campbell, of course, is well known for his efforts in the field of dental history and this booklet which appeared originally as articles in the Glasgow Herald enhances his already attained reputation.

W.J.D.

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions

CAMPBELL, J. M.: Dentistry as practised 1800-1921. 11 p.

CLARK, J. S.: Open wider, please; the story of dentistry in Oklahoma. 1955. 391 p. illus.

KAHN, S.: Make inferiorities and superiorities work for you. 1954. 184 p.

LUCAS, R. B., & KRAMER, I. R. H.: Bacteriology for students of dental surgery. 1954. 262 p. illus.

MITCHELL, G. A. G., & PATTERSON, E. L.: Basic anatomy. 1954. 438 p. illus.

The Association

James Zimmerman, Calgary—Appointed

Official notice has been received from the Secretary of the Alberta Dental Association as follows:

This certifies that, at a meeting of the Board of Directors of the Alberta Dental Association, Dr. James Zimmerman was appointed representative of the Board to the Board of Governors of the Canadian Dental Association, his appointment to take effect only after the elevation of Dr. R. R. McIntyre to the presidency of the Canadian Dental Association.

R. A. ROONEY (Signed)

R. A. Rooney,
Secretary.

Nova Scotia Increases 1955 Grant

At the Annual Meeting of the Nova Scotia Dental Association, held July 5th last, it was unanimously agreed that the per capita grant to the Canadian Dental Association for the year 1955 would be twenty (20) dollars.

Facts on Fluoridation—3rd Edition

A revised edition of this publication with new information added is now available. The Research Committee endeavours to present factual data in an accurate manner for the use of all those taking any part in forwarding this public health measure. Single copies free on application. In quantities 25 cents per copy.

Blue Cross Plan to Include Widows

Arrangements have now been made to continue group coverage for the widow of a dentist who at the time of his death was enrolled under the Canadian Dental Association Blue Cross Plan.

35.4% of Total Membership now in Blue Cross Plan

Some 1877 members of the C.D.A. are now members of the C.D.A. Blue Cross Plan. Of these 799 have taken in addition the medical and surgical benefit under the plan.

Donate Grants for Dental Research

Dental and medical research projects were awarded grants totalling \$50,000 by the Canadian Life Insurance Officers' Association.

Six grants are for studies into tooth decay, gum diseases and malformation of teeth co-ordinated under the division of dental research of the University of Toronto's faculty of dentistry.

Grants also were announced for a study of salivary glands at Hamilton College, two studies in diabetes at Queen's University, a study of virus diseases at the Hospital for Sick Children, Toronto, and for expansion work of the recently launched College of General Practice of the Canadian Medical Association.

Fluoridation Notes

Nanaimo, B.C.—The water supply of Greater Nanaimo will be fluoridated. Included in the area are the city and four districts, Northfield, Chase River, Harewood and Departure Bay.

Prince George, B.C.—will become the first city to fluoridate its water supply according to press notices.

World Health Organization Appoints Dental Post

The following report was made at the 43rd Meeting of the Federation Dentaire Internationale at Copenhagen, Denmark, 14th-20th August, 1955:

Report of the F.D.I. Representatives at the 8th World Health Assembly, Mexico City, May 10th-27th, 1955

"The World Health Organization met in Mexico City from May 10th to 27th, 1955, with representatives from more than 70 countries present.

Its first meetings were held on Tuesday, May 10th.

The undersigned functioned as an adviser to the delegation from the United States and, with Dr. Roberto Ruff of

Mexico City, as observer for Federation Dentaire Internationale.

I was assigned to the Committee on Program and Budget, and was thereby privileged to listen to the discussions relating to program and budget and to participate in them.

In order to better understand the procedures followed, perhaps a general outline of them would be helpful. They centered around three units or organizations:

1. The Executive Board
2. The Committees
 - (a) The Committee on Administration, Finance and Legal Matters.
 - (b) The Committee on Program and Budget.
 - (c) Special Committees.
3. The Plenary or Assembly.

The Executive Board functions during the session as well as between sessions, or throughout the year. One of its functions is to present a program and budget for the coming year.

The Committee on Administration, Finance and Legal Matters considers matters indicated by its title.

Likewise, the Committee on Program and Budget devotes its time to program and budget matters and it has definite assignments in this respect. This Committee reviews the recommendations of the Executive Board in the following general order:

- a. An over-all review of the proposed program of activity for the coming year and a determination of how it fits into the general WHO program.
- b. A detailed analysis of the individual items included in the program for (1956).
- c. Making recommendations to the World Health Assembly on program and budget for the coming year.

I shall not attempt to discuss the many matters that present themselves in a consideration of the various health problems of the world, suffice to say that there are frequently broader considerations such as

living standards, that preclude the attainment of desirable goals.

I shall therefore, confine my comments to the dental health problems.

It was apparent that the Executive Board and the Director-General had given consideration to the desirability of making available in the WHO office in Geneva, information on dental health matter to any country seeking same, by including in the budget for 1956, a sum that would provide for a full time dentist and a secretary in the organization.

No doubt, this was the result of the Board's decision to recommend a 1956 program pointing to a broader public health service. The previous presentations on behalf of dentistry's place in public health, no doubt, had much to do with the decision of the Board.

In evaluating the proposed 1956 program as a whole, various countries spoke on the subject. Among them was Dr. Martha Elliott of the Children's Bureau of the United States. In referring to the benefits of a broader public health service, she, at my suggestion, made special mention of the desirability of the inclusion of dental health services.

When later, the individual items in the 1956 program were considered, and Public Health Service was the specific subject of discussion, it was my privilege to make the following statement on behalf of the Federation Dentaire Internationale:

"Mr. Chairman,

I thank you for the privilege to comment as an observer for the International Dental Federation upon the establishment of a dental post in the headquarters of WHO. I shall not take your time to review the recorded reasons which caused the Director-General and the Executive Board to consider favourably the inclusion of a budget item for 1956 for this purpose. It is gratifying to note that this has been done at a time when dental programs are being recognized more and more as a part of health programs designed for the "attainment by all peoples of the highest possible level of health" (Constitution of WHO).

The establishment of such a post will make it possible to have available at all

times, expert opinion and advice on dental health matters, not only for integrating this with other related fields of study and activities, such as nutrition, etc. . . but to also make available to countries seeking specific information on dental health problems, the experiences of others in this field.

The accumulation of information on the effectiveness of control and preventive measures for various dental diseases, under varying conditions throughout the world might well become a major contribution of this organization.

The decision of the Director-General to place this activity in the Public Health area also seems logical.

Thank you, Mr. Chairman."

Throughout the discussion of the 1956 program and budget, it appeared that the inclusion of Dental Health was acceptable and no adverse comment was registered.

The program and budget that was recommended by the Committee on Program and Budget on Wednesday, May 25th, included the items for dental health as presented by the Executive Board originally.

It was necessary for me to return to

the United States on Thursday, May 26, and it was therefore not possible for me to attend the plenary sessions on Thursday and Friday, where final action on program and budget was taken.

However, Dr. Ruff was able to attend these final sessions and has advised that the program and budget as recommended were approved. He was also able to attend the first meeting of the new Executive Board, (sixteenth session) on Monday, May 30th, and reports concurrence at this session.

Since the adjournment of the World Health Assembly, a letter has been received from Dr. Leonard A. Scheele, Surgeon General, Public Health Service of the United States, in which he states that Dr. John Knutson, ranking dental officer of U.S. Public Health Service, will leave in a few days for Geneva for a period of 6 months, to aid in organizing the dental activities in WHO headquarters.

This suggests that the dental program is moving forward at an accelerated rate."

Respectively submitted,
O. W. Brandhorst.

Eastern Ontario Dental Association Convention

Ontario

Chateau Laurier Hotel

Ottawa

September 18th, 19th, 20th

Clinicians:

Lt-Col. R. H. Augsburger — Dr. Frank Martin — Dr. H. Caplan
Dr. Harris Crowson.

Programme includes:

Table Clinics — Exhibits — Business Meeting — Dental Public
Health — R.C.D.C. — Dinner Dance — Golf — Movies — Luncheons.

Also a special programme for the ladies.

Committees and Councils

Health Insurance Studies Committee

Contrary to the belief of most dentists, the extension of existent health services and the introduction of new government health care plans are very much in the fore-front of government thinking; at the federal-provincial conference to be held in October, these plans occupy top priority on the agenda.

Several provinces have had in existence for some years, government sponsored health care plans that have proven highly expensive and difficult to administer. It is only reasonable to expect that at the forthcoming conference these provinces will be quite favourable to some federal sponsored plan that would solve their difficulties.

The Canadian Dental Association, through the Committee on Health Insurance Studies and other committees, has for years pointed out the difficulty of introducing such plans due to the lack of dental personnel. It has also supplied information as to the probable cost involved.

Unfortunately the position of dental personnel in Canada is not improving,

rather it is deteriorating, because while the population of Canada is increasing rapidly, the facilities for training dentists remains the same as in 1930.

So often in the Press and in interviews with government authorities it is stressed that the dental profession must do something about this lack of dentists. Let us hasten to point out that it is not the responsibility of the dental profession to supply facilities for training dentists and auxiliary personnel—this is the responsibility of the several governments of Canada through the universities. May we reiterate that the Canadian Dental Association has for many years, almost to the point of annoyance, pointed out to the proper authorities the tremendous need for the extension of university facilities to train more dentists and auxiliary personnel in order to cope with the present demand for dental service.

If the October conference should reach agreement on plans which promise increased health services to the people of Canada, it will place the dental profession in a most difficult position. With present personnel and existent training facilities it would be simply impossible to provide such services.

Make Your Plans Early

THE ANNUAL CONVENTION OF THE CANADIAN DENTAL ASSOCIATION

will be held at the beautiful

BANFF SPRINGS HOTEL • JUNE 3, 4, 5, 6, 1956

Economic Security

All Men Are Mortal

(Introduction)

by E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.Econ.S.,
Consulting Economist, and Administrator of the
C.D.A. Plan.

"All men think all men mortal — but themselves!"—Edward Young (1683)

The actions which men take in many spheres of life, even the most important, often are based upon inaccurate and misleading assumptions. The decisions which men take in the field of social economics—the business of supplying food, shelter, and clothing—are no exception. Decisions vitally affecting the conditions of life for an individual, and his descendants as well, frequently are directed by two very prevalent but very fallacious forces:

The first is the natural optimism of men: "It can't happen here!" "It can't happen to me!" The young man just entering the Profession said, "Life Insurance? I don't need it, I'm never going to die!" Yet one of his own classmates was disabled for life within three months. It was only by chance that it was not himself.

The second danger is that of inadequate and misleading information. A dentist exclaimed some time ago: "No one ever gets sick here!" Within a few days of his utterance, the wife of another dentist was writing: "My husband has been in ill health for the last five years, having suffered . . . , as a result of which he has not been able to carry on his practice at all during that time and his condition is such as to render him incapable of practising again."

Sometimes statements are based on what appears to be some form of reliable statistical evidence: Some time ago an

insurance agent circulated a statement amongst a metropolitan group that the records of his company showed that over the previous fifteen years they had only one case of disability reaching twenty-eight months' duration. The inference drawn by many members in that city was that long-term disabilities are too infrequent and rare to justify proper provision for them. Adequate statistics, such as those compiled by the Department of Health and Welfare, would have disclosed that at the very moment the agent was writing, there were 155,000 Canadians between the ages of 18 and 64 (a period only slightly exceeding the years of professional practice) who had been either "severely or totally disabled" for a period of five years or more, and of these 101,000 had been disabled for ten or more years. (This figure excludes all cases of mental illness and mental deficiency, and residents of institutions).

It is the function of the social economist to assemble all the known evidence on the subject and present it in such form that conclusions so dangerous as the above can be avoided. The evidence does exist: In the monumental "Canadian Sickness Survey" (which includes also accidents), by the Department of Health and Welfare and the Dominion Bureau of Statistics, and in the special studies of the Dental Profession in particular by the Mayo Clinic in Rochester, as well as by Dr. Bernstein and Dr. Balk in the Newark Clinic. These reports will be summarised in subsequent articles under the following headings:

- A. Causes and Incidence of Disability
- B. Duration of Disabilities

- C. Causes and Rates of Decease
- D. Cost of Disability
 - (i) Loss of Income aspect
 - (ii) Treatment aspect
- E. Cost of Decease
 - (i) Loss of Income aspect
 - (ii) Direct financial aspect.

It has been frequently stressed in lectures before the local Societies that it is possible accurately to forecast the inci-

dence of disability and decease amongst the Members of the C.D.A. in the aggregate — the only thing it is impossible to determine is "*whom* the lightning will strike." The coming articles will set forth the statistical evidence which will help other Members to appraise the importance of making adequate provision for the-too-frequent suffering brought about by the "things which never happen."

The Corps

Brigadier E. M. Wansbrough visited Camp Gagetown, N.B., early in August to observe the programme of Regular Army collective training and to inspect the dental unit taking part.

A Winnipeg Unit has been chosen as the best dental unit in the Canadian Army (Militia) following a nation-wide competition sponsored by the Director General of Dental Services. In announcing the trophy winners, Brigadier E. M. Wansbrough states that the keenness of the competing units and the degree of efficiency attained this year is the highest in the history of the competition.

First place, the Moore Trophy and a cash award, was won by 57 Dental Unit, Winnipeg, Manitoba, commanded by Lieutenant Colonel J. L. Warriner, C.D. This trophy was presented by Lieutenant Colonel Stephen A. Moore, C.D., F.I.C.D., the first Honorary Lieutenant Colonel of the Corps.

Second place, the Trelford Trophy and a cash award, was won by 54 Dental Unit, Ottawa, Ontario, commanded by Lieutenant Colonel G. K. Clarke. This trophy, in honour of Lieutenant Colonel W. G. Trelford, V.D., who commanded the first dental unit to proceed overseas in the Second World War, was presented by the officers of No. 1 Company, C.D.C., who left Canada with him in 1939.

The Saskatchewan Dental Association Memorial Trophy was also won by 54 Dental Unit, Ottawa. This trophy is awarded to the

unit showing the greatest improvement in general efficiency during the training year. It was presented by the Saskatchewan Dental Association in memory of its members who made the supreme sacrifice in the Second World War.

The cash prizes awarded to the winner and runner-up in this competition are donated by the Royal Canadian Dental Corps Association.

The presentation of trophies and cash awards will be made at the time of the annual meeting of the R.C.D.C. Association in Ottawa, October 6th, 7th and 8th.

•

The Corps' 54 Dental Unit CA (M) under the command of Lt.Col. G. K. Clarke, attended Summer Camp at Niagara-on-the-Lake from 25 June to 2 July last. Forty officers and men of 54 Dental Unit, with attached personnel, attended camp. The camp was a combined camp of all Dental Militia Units of Central Command, under the command of Col. K. M. Baird, OBE, CD. Other Units in camp were 55 Dental Unit (London, Ont.) and 56 Dental Unit (Toronto, Ont.)

On the final day of camp, an inspection and march past was held. Inspecting Officer was Brig. G. E. R. Smith, who also took the salute. The final exercise was attended by Brig. E. M. Wansbrough DGDS.

Following the final exercises, a Mess Dinner was held at the Dental Officers Mess.

Official visitors were Brig. G. E. R. Smith and Brig. E. M. Wansbrough.

At the Mess Dinner, it was announced that the Command Dental Officers Trophy had been won by 54 Dental Unit, for the second year. This trophy is awarded each year for attendance and general efficiency at Summer Camp. Brig. G. E. R. Smith presented the trophy to Lt. Col. Clarke Commanding Officer of 54 Dental Unit. Col. Clarke expressed his appreciation to the officers and men of the Unit for their splendid efforts during the camp.

The following Officers of 54 Dental Unit were successful in the recent qualifying Examinations:

Capt. to Major

Organization: Capt. D. E. Long; Capt. A. C. Murchison; Capt. W. D. M. Wright.

Training: Capt. F. M. Bliss; Capt. W. C. Gallagher; Capt. E. H. Jones; Capt. D. E. Long; Capt. A. C. Murchison; Capt. W. D. M. Wright.

Special to Corps: Capt. F. M. Bliss; Capt. D. E. Long; Capt. W. D. M. Wright.

Lt. to Capt.

Military Law: A/Capt. R. Green; A/Capt. C. O. McDougall; A/Capt. K. F. Pallett; A/Capt. J. Thomas; A/Capt. J. W. B. Ville-neuve.

Unit Administration: A/Capt. R. Green; A/Capt. C. O. McDougall; A/Capt. J. Thomas.

Special to Corps: A/Capt. R. Green; A/Capt. C. O. McDougall; A/Capt. K. F. Pallett; A/Capt. J. Thomas.

The Provinces

Prince Edward Island

James McLean, D.D.S., F.I.C.D., Dean of Dalhousie Dental School, was presented with the Key of the City by His Worship Mayor J. D. Stewart, at a dinner meeting of Maritime Dentists in annual convention at the Charlottetown Hotel on July 5th, 1955.

In making the presentation Mayor Stewart expressed appreciation on behalf of the city and the Centennial Committee that the **Maritime Dental Convention** had agreed on Charlottetown as their meeting place. "Our people have enjoyed meeting the members and wives of your association and we sincerely trust that you have enjoyed your stay with us," Mayor Stewart said. Dr. McLean fittingly acknowledged the honour, which he accepted as a token of goodwill towards the members of the dental profession.

The presentation was made in the traditional manner following appearance of the Town Crier, Ivan Doherty, accompanied by Acting City Clerk, John Butler carrying the Key, under the official escort of Constables Lloyd Archer and Russell Downe of the City Police Force. The party was conducted from the dining-room entrance to the head table by the Mayor's personal piper, Barry MacGillivray.

The guest speaker was Frank MacKinnon M.A., PhD, LL.D., Principal of Prince of Wales College, who spoke on "Political Orthodontics". He drew a skillful and highly interesting parallel between certain aspects of dentistry and politics, which enabled those present to determine in their own minds, just what changes and advances have been made in the respective fields during the past years.

Expressions of appreciation were made by Dr. H. E. Clark, of Summerside and Dr. Coughlan, Saint John, N.B., who said that the Nova Scotia and Newfoundland representatives present were grateful for the excellent program provided and that they would carry away with them the recollection of a banner meeting on "The Island".

The meeting was presided over by Dr. K. A. MacEachern, Charlottetown, president of the P.E. Island Dental Association.

Head table officials and guests: Mrs. C. B. Climo, Dr. R. H. Bingham, Mrs. Allan Coughlan, Dr. D. K. Peters, Mrs. Frank MacKinnon, Dr. J. K. L. Irwin, president P.E. Island Medical Association, Mrs. K. A. MacEachern, Dr. James MacLean, His Worship Mayor J. David Stewart, Dr. K. A. Mac-

Eachern, Dr. Frank MacKinnon, Mrs. James MacLean, Dr. Allan Coughlan, Mrs. D. K. Peters, Col. C. B. Climo, Mrs. R. H. Bingham, Dr. A. D. MacGregor.

Saskatchewan

The following were elected to office in the **Western Canada Dental Society** at the 13th Convention held in Regina.

President—Dr. W. J. Riley, Winnipeg,

Past President—Dr. L. D. Haselton, Saskatoon,

1st Vice-President—Dr. J. C. Ward, Edmonton,

2nd Vice-President—Dr. W. K. Martin, Regina,

Convention Convener—Dr. R. O. Brett, Regina.

British Columbia

The Executive of the **B.C. Dental Association** no sooner wound up the affairs of the 1955 Convention than it began to plan for next year's meeting, also to be held in Vancouver. An early start is essential owing to the need for reservations for lecture and clinic space. Dr. Leslie Marshall has been named Convention Chairman, and his Program Chairman will be Dr. W. R. Scott.

A convention manual has been drawn up as a guide for the future. The convention chairman for the 1957 convention has also been appointed, so that he may sit in on the meetings this year and be prepared for his stint of labor the year following.

Study clubs will also be notified well in advance regarding headline clinicians, the object being that if the study club members wish to avail themselves in their own groups of the headliners' time, this can be arranged.

Twenty-one candidates who presented themselves in June for the examinations of the **College of Dental Surgeons of B.C.** to practise in the province, were successful. Applicants came from the Universities of Toronto, Alberta, Washington, Oregon and McGill; and also from England and Australia. One young lady student succeeded in passing the Dental Hygienists' examination.

Volley ball and swimming sounds an unusual feature for a dental meeting, but this is what happened at the last meeting of the season for the **Fraser Valley Dental Society**. Good food was served in the open air and sunshine on July 7 at the home of Dr. W. G. Newby on the Veddar Road near Chilliwack. A short business meeting was also held.

D.H.M.

General News

To help inaugurate a **preschool preventive dental program** in Toronto, a federal health grant of \$7,981 has been awarded the city of Toronto, it was disclosed recently by Hon. Paul Martin, federal health minister.

The project, believed to be the first of its kind in Canada, will get underway in the Riverdale district of Toronto. A dental health team will concentrate on preschool children in an intensive educational, case finding, referral and follow-up program.

The program is slated to run for three years on a demonstration basis. It is expected that 1,700 three-year olds will be reached in the first year, and the plan is to

follow these up until they enter school.

In announcing the grant Mr. Martin declared, there is a growing feeling among public health dentists that more attention should be paid to preventative dental work among preschool children. At this stage, he said, and in the early school years, the dental problem is of manageable size, and children are most receptive to the teaching of good habits of oral hygiene.

Experts in the field also view this new approach as more economical than a program spread thinly over an older age group which has already accumulated substantial dental health problems.

The minister also emphasized that the program will be essentially an educational and case finding one. Treatment will NOT be provided under the project but will be given by private dentists and part-time dentists employed by the city of Toronto.

When the extensive data accumulated in the study is compiled, it will be compared with statistics on the oral health of a comparable group of children who have not had this service. It will then be possible to determine whether the new approach is sound and whether it should be extended to other areas.

The National Dental Examining Board of Canada—Annual Meeting June 3rd and 4th, 1955

At the Annual Meeting of the National Dental Examining Board of Canada held on July 3rd and 4th in Ottawa, Dr. R. J. Godfrey was elected President, Dr. H. R. MacLean was elected Vice-President, and Drs. Hugh Eaton, A. G. Racey and R. G. Ellis were elected to the Executive.

At this Meeting Dr. H. J. Merkeley, the retiring President presented a gavel on behalf of the Canadian Dental Association to Dr. R. J. Godfrey, the new President. This gavel, expertly fashioned by Dr. P. G. Anderson, past President of the Canadian Dental Association, is composed of wood having historic significance from all of the provinces of Canada.

National Dental Examining Board of Canada

The following are the results of the June examinations of the National Dental Examining Board of Canada:

Claude Baril, Outremont, Montreal, Que.
Neil Basaraba, Smoky Lake, Alta.
Jacob Peter Bekker, Ryley, Alta.
Jack Harold Bernstein, Montreal, Que.
Alexander Stein Black, Saskatoon, Sask. (Preventive Dentistry)
Alexander Bondarchuk, St. Catharines, Ont.
Gordon Stanley Bowles, Fort William, Ont.
John William Bradey, Parry Sound, Ont.
Daniel Leslie Britt, St. John, N.B.
Walter Alexander Buck, Heinsburg, Alta.
Ralph LeRoy Bull, McAdam, N.B.
James Wilbert Callaghan, Moncton, N.B.
John Alexander Chalmers, Toronto, Ont.
John Alexander William Chomyn, Ottawa, Ont.
Alfred William Esson Cluett, London, Ont. (Oral Medicine)
William John Cummings, Ottawa, Ont.
Raymond Albert Downton, St. John's, Nfld.
John Harold Duggan, Stratford, Ont.



NATIONAL DENTAL EXAMINING BOARD OF CANADA

New Executive, 1955

Seated (left to right) Dr. H. R. MacLean, Vice-President, Dr. R. J. Godfrey, President.

Standing (left to right) Dr. Hugh Eaton, Dr. A. G. Racey, Dr. R. G. Ellis, Executive.

Douglas Arthur Eisner, Windsor, Ont.
Gerald James Evenden, Regina, Sask.
Edward Erwin Fast, Winnipeg, Man.
Harold Fayerman, Prince Albert, Sask.
Stanford Roy Fielding, Eston, Sask.
Louis James Frost, Sydney River, N.S.
Donald Francis Green, Calgary, Alta.
William Green, Deer Lake, Nfld.
Paul Guilbault, Rouyn, Que.
John James Hemphill, Waterloo, Ont.
James Toy Hing, Hamilton, Ont.
Lorne Herschell Hock, North Battleford, Sask.
Alexander Eli Hoffman, Halifax, N.S.
Vincent Keith Horbay, Winnipeg, Man.
Tatsuo Hori, Toronto, Ont.
Gordon Moore Hutchinson, Amherstburg, Ont.
Earl Patrick Kennedy, Windsor, Ont. (Oral Medicine)
Leonard Edward Kent, Lachine, Que.
Akira Kimura, Montreal, Que.
William Donald Kirstine, Edmonton, Alta.
Terrence Stanley Kline, Edmonton, Alta.
Sam Kobrinsky, Winnipeg, Man. (Oral Medicine)
Walter Kowal, Montreal, Que.
Stanley Stephen Kucey, Edmonton, Alta.
Russel Laba, Ituna, Sask.
Francois Benoit Lavole, North Bay, Ont.
Joseph Elui LeBlanc, Wedgeport, N.S.
Malcolm James Robert Leitch, Kelowna, B.C.
Harvey Lawrence Levitt, Town of Mount Royal, Que.
Kenneth Maxwell MacDonald, Winnipeg, Man.
James Crawford Martin, Vancouver, B.C.
John Elmer MacPhee, Souris, P.E.I.
Reginald Grant Merriam, Guelph, Ont.
Eric Peter Millar, Montreal, Que.
Edwin Yoichi Minato, Vernon, B.C.
Kenneth Neil Munro, Willowdale, Ont.
Donald Lewis McBride, Toronto, Ont. (Oral Medicine)

Kevin Walsh McCann, Langley Prairie, B.C.
 Clifford Hector McCormick, Yorkton, Sask.
 Donald Peter McGibbon, Argenteuil, Que.
 Robert Sidney McKegney, Toronto, Ont.
 Kira Obrazcova, Corner Brook, Nfld.
 Fred Ollinik, Buchanan, Sask.
 Edward Ostrovsky, Montreal, Que.
 Robert William Pentz, Halifax, N.S.
 Ralph Gilbert Perry, Gardston, Alta.
 Harvey Graham Pettapiece, Vancouver, B.C.
 Raymond Ernest Piche, Gravelbourg, Sask. (Prosthodontics)
 Robert Alfred Port, Kimberley, B.C.
 Wilbert George Prentice, Springhill, N.S.
 William Harvey Revington, Lucan, Ont.
 Ronald Stewart Robertson, Ottawa, Ont.
 Robert Bruce Ross, Sydney, N.S.
 William Duncan Sanders, Montreal, Que.
 Ophelia Rosalie Sarchuk, Cudworth, Sask.
 Albert John Schutz, Montreal, Que.
 Gordon William Edward Schwann, Regina, Sask.
 Kennon Russell Paul Settrington, Tilbury, Ont.
 Harry Szouroski, Broadview, Sask.
 George Allan Taylor, Ottawa, Ont.
 John Ellis Taylor, Cornwall, Ont.
 Elgin Stewart Thompson, Sarnia, Ont.
 Donald Alexander Townsend, Dorval, Que.
 Tadao Tsuyuki, New Westminster, B.C.
 Myron Eugene Warnick, Edmonton, Alta.
 Morris Hershell Wechsler, Montreal, Que.
 Randal Morrison Williams, Sarnia, Ont.
 Albert Joseph Wilson, Charlottetown, P.E.I.
 Carl John Yaskowich, Wynard, Sask.
 Ralph Algard Yuodels, Edmonton, Alta.

It has been established "overwhelmingly" that fluoridation "is not only a constructive public health measure but it is as safe as is humanly possible to determine." This was the statement of Dr. George F. Lull, of Chicago, secretary and general manager of the American Medical Association, in an editorial published in the June issue of the A.M.A. magazine, *Today's Health*. After examining and refuting the various arguments raised against fluoridation, Dr. Lull took particular issue with the "impression" that the A.M.A. did not endorse the measure. "Both the A.M.A. Council on Pharmacy and Chemistry and the A.M.A. Council on Foods and Nutrition expressed themselves definitely to the effect that fluoridation is safe," Dr. Lull pointed out. "If this is not an endorsement—what is it?" Reprints of the editorial are available from the A.D.A. Bureau of Public Information.

A total of 1,073 communities in the United States was participating in fluoridation programs serving 20,620,850 persons at the end of June, according to information obtained by the **A.D.A. Council on Dental Health**. The program was started in three additional communities and halted in ten which were served by one project, Greenville, S.C. The Greenville program, serving nearly 160,000 persons, started in January 1954 and was discontinued as the result of a referendum.

British Commonwealth News

An Exhibition of Early Dentistry

Dr. J. Menzies Campbell (Hon. Member, *American Academy of the History of Dentistry*) was granted permission by Glasgow University Court to exhibit in The Hunterian Museum, during the currency of the 75th Annual Meeting of the *British Dental Association*, a wide assortment from his private collections of early dentistry.

This was contained in four cases (two each 21 feet x 3 feet, and two each 4 feet x 2 feet), surrounded by priceless Whistler pictures in the aura of William Hunter.

The aim was to present dental history in a "live" form by arranging everything as attractively as possible, with adequate descriptions and copious notes. The daily

attendances—dentists, medicals and the general public—were ample recompense for all the work entailed.

It is possible to refer to only a very few of the outstanding exhibits which included:

M.S. (with Congress Certificate protecting title) of Eleazer Gidney's Treatise (pub. Utica, 1824). His Removal Notices, and Certificate (signed by Chapin A. Harris) of Honorary Membership of the *American Society of Dental Surgeons* at its first meeting, August 18-20, 1840.

Warrant granted to Bartholomew Ruspini for recording his title of Chevalier and his own and his wife's armorial ensigns.

The British Quarterly Journal of Dental Surgery, 1843, complete (ceased after two

issues). The first dental journal published in Britain.

The Forceps (complete); Started 1844, ceased 1845. The second dental journal published in Britain. Among many other elusive books and pamphlets were the very rare *Five Minutes' Advice on the Care of the Teeth* (1833) by Edwin Saunders, and Edward Miles's *Treatise* (1846) with its magnificent Baxter print frontispiece.

Instruments on view embraced:—Pelicans from c. 1580: Keys from c. 1730: Punches from c. 1700: Forceps from c. 1600-1650: 25 complete small cases of instruments from c. 1620: Superb Evrard bow-string drill (c. 1850) with accessories all in fitted case: Harrington's silver clockwork drill (c. 1864)

complete with straight and right-angled handpieces and winding key.

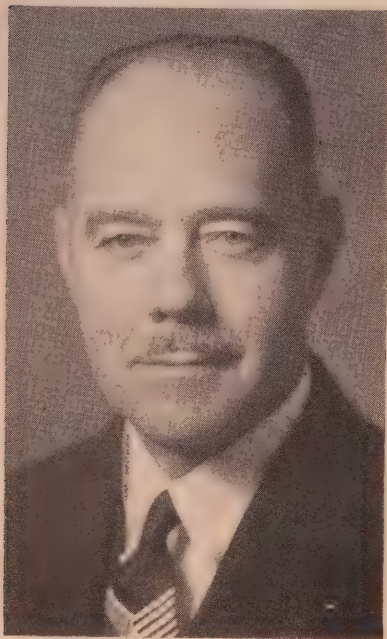
The most outstanding among the Artificial Dentures were two complete sets (intact), uppers and lowers, constructed entirely of de Chémant's "mineral paste" and a 4 pp. handbill (c. 1797) advertising them.

There were five exquisite silver Toothbrush Sets complete in original cases fitted for toothbrush, toothpowder container and tongue scraper. These were hall-marked respectively 1794, 1795, 1796, 1799 and 1827.

Fourteen different Tokens and Medals were on view, issued by Operators for the Teeth, Hairdresser and Tooth-drawer: and for Anodyne necklaces.

A volume containing 633 different dental advertisements (1711-1850), brimful of history.

In Memoriam



DEAN D. PRESCOTT MOWRY,
Faculty of Dentistry, McGill University.

Daniel Prescott Mowry—Dr. Daniel Prescott Mowry, dean of the Faculty of Dentistry at McGill University, passed away on August 2, 1955 after a lengthy illness.

Dr. Mowry was born in Holliston, Mass., in 1894 and had been on the McGill staff since 1929 when he became a lecturer in dentistry. He was named associate professor of periodontia in 1937, a full professor in 1945 and dean of the faculty in 1948.

After early education in the United States he entered the Feller Institute at Grande Ligne, Quebec, and McGill. He acquired Canadian citizenship in 1929.

In addition to his McGill post, he was director of the department of dentistry at Montreal General Hospital, consultant in periodontia at St. Mary's Hospital, Montreal, and dental surgeon at Royal Victoria Hospital.

He was made a fellow of the American College of Dentists in 1945 and of the International College of Dentists in 1948. He was a member of the American Academy of Periodontia. He served one term on the Montreal City Council and was on the Board of Health. Some years ago he became interested in flying and was at one time president of the Montreal Light Airplane Club.

He leaves his widow and one son, Stephen, who is now in California.

George Albert McGuire—Dr. George A. McGuire died in Vancouver, B.C. on July 2 at the age of 84.

Born in Mount Forest, Ontario, he received his early education there and graduated in dentistry from the University of Maryland, Baltimore, in 1892 and in the same year established a practice in Vancouver at the age of 21.

In 1905 he was a member of the Council of the College of Dental Surgeons and next year he was President of the B.C. Dental Association.

During the first quarter of this century he was a prominent figure in public life. He was Minister of Education and in this capacity was influential in creating and securing the passage of legislation which resulted in the establishment of the University of British Columbia. He followed its growth and accomplishments throughout his life.

Dr. McGuire was a life member of the Vancouver Canadian Club and had been a member of the Shaughnessy Golf Club. He had also been active in Acacia Lodge, A.F. & A.M., Knights of Pythias, Royal Templars, Independent Order of Foresters, and St. Giles' United Church.

Surviving are his wife, Jennie, two daughters, Mrs. Hunter Lewis and Mrs. W. K. Leckie, and one grandson, all of Vancouver.

A prominent citizen pays this tribute: "Dr. McGuire was an outstanding man; quiet, very popular and effective in his legislative duties. He contributed a lot in laying the foundation for the future development policies of B.C. along with Sir Richard McBride."

Thomas Arthur Provost—Dr. Thomas Arthur Provost passed away on June 18, 1955, after a lengthy illness. He was 57.

Born in Ottawa, Dr. Provost attended the University of Ottawa and in 1821 he graduated from the Royal College of Dental Surgeons.

Dr. Provost was a popular parishioner of St. Jean-Baptiste Church and vice-president of La Caisse Populaire of St. Jean-Baptiste Alumni and the Blessed Sacrament Society.

He was an ex-President of the Ottawa Dental Society and an ex-director of the Eastern Ontario Dental Association.

He was a founder and past president of the Masse Bowling League, a past president of the patrons of the Third Troop of St. Dominic Boy Scouts.

Surviving Dr. Provost is his widow, the former Ange Fleury.

Arthur Burrows Morrow—Dr. Arthur Burrows Morrow died on June 23, 1955, after a short illness. He was 50.

Born in Ottawa, Dr. Morrow received his early education at Glebe Collegiate and in 1929 he graduated from the Faculty of Dentistry of the University of Toronto. Since graduation he had practised in Ottawa.

From 1938-39 Dr. Morrow was President of the Ottawa Dental Society and in 1943-44 was president of the Eastern Ontario Dental Association. He was a member of Glebe United Church and Sidney Albert Luke Lodge, A.F. & A.M.

Surviving Dr. Morrow is his widow, the former Florence C. Shaver, and three sons, Ronald Arthur, John David, and William Franklin.

Chester Neterville Abbott — Dr. Chester Neterville Abbott passed away at his home in London on July 21, 1955. He was 84.

Dr. Abbott was born in London and he practised there until just a year ago. He was a graduate of the R.C.D.S. in 1894 and an Honorary Member. He was also an Honorary Member of the Ontario Dental Association and a member of the C.D.A. Dr. Abbott was well known for his work as a gold foil operator which he continued even in his latter days.

Dr. Abbott is survived by his daughter, Mrs. Ronald Charlton of Montreal. His wife predeceased him in 1951.

Albert Francis Dyer—Dr. Albert Francis Dyer of Vancouver passed away on July 11, 1955. He was 80.

Dr. Dyer was born in Oshawa and took his degree in dentistry at Buffalo, N.Y. in 1905. He practised in Regina for 10 years before coming to Vancouver in 1924.

He was a member of the Vancouver Kiwanis Club.

Besides his wife, Nelle, he leaves his son Dr. Francis W. Dyer of Vancouver and his daughter, Mrs. E. G. King of Bellingham.

Edgar Linton Thompson — Dr. E. L. Thompson of Vancouver, B.C., died in Shaughnessy Hospital on June 11 at the age of 69.

He graduated from Toronto in 1909 and commenced practice in Vancouver in 1911. Owing to ill-health he retired from practice a year ago.

He leaves his wife; a son, Douglas; a daughter, Mrs. F. Millard, and seven grandchildren.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1956	Banff, Alberta	June 3rd — 6th
1957	Winnipeg, Manitoba	June 23rd — 26th

FUTURE EVENTS

<i>Date</i>	<i>Function</i>	<i>Location</i>	<i>Officer</i>	<i>Address</i>
Sept. 16	Dental Golf and Dinner	Toronto	Dr. G. A. Paterson	3349 Dundas W. Toronto, Ont.
Sept. 18, 19, 20	Eastern Ontario Dental Association	Ottawa	Dr. A. C. Stinson	202 Laurier Ave. Ottawa, Ont.
Oct. 13-15	American Academy of Periodontology	San Francisco	Dr. E. G. Baker	American Academy of Periodontology
Oct. 14, 15	American Academy of Gold Foil Operators	San Francisco	Dr. L. R. Ludwigsen	1425 Mendell Street, San Francisco, California.
Oct. 14-16	Dental Alumni Assoc. Annual Homecoming	Toronto	Dr. R. C. Moore	2 Glenview Blvd. Toronto, Ont.
Oct. 18	50th Anniversary of Dental Alumni of McGill University	Montreal	Dr. Bruce Ward	1414 Drummond St. Montreal, P.Q.
Oct. 17-20	A.D.A. Convention	San Francisco	Dr. H. Hillenbrand	222 E. Superior St. Chicago, Ill.
Oct. 19-21	Montreal Dental Club Annual Fall Clinic	Montreal	Dr. Bruce Ward	1414 Drummond St. Montreal, P.Q.
Oct. 23-27	American Institute of Dental Medicine	Palm Springs California	Miss Marion G. Lewis	2240 Channing Way Berkeley 4, Cal.
Oct. 23-28	The Mexican Dental Association —Third International Congress	Mexico City	Dr. German Sanchez Cordero	Asociacion Dental Mexicana, Insurgentes 257-13 Mexico 7, Mexico
Oct. 24	Academy of Dentistry Annual Dinner	Toronto	Dr. Robt. Marshall	200 St. Clair W. Toronto
Nov. 25	Academy of Dentistry Winter Clinic	Toronto	Dr. Robt. Marshall	200 St. Clair W. Toronto
Dec. 4	American Academy of Dental Medicine Meeting	New York	Dr. George J. Wilkin,	45 S. Broadway, Yonkers 2, N.Y.

SHORT GRADUATE COURSES

<i>Date</i>	<i>Course</i>	<i>Location</i>	<i>Address</i>
Sept. 19-23	Occluso-Rehabilitation	Tufts School of Dental Medicine	Dr. Irving Glickman, Director Division of Post-Graduate Studies, 136 Harrison Ave. Boston, Mass.
Oct. 19-Dec. 14	Minor Oral Surgery	Tufts School of Dental Medicine	Dr. Irving Glickman, Director Division of Post-Graduate Studies, 136 Harrison Ave. Boston, Mass.
Nov. 7-11	Periodontology	Tufts School of Dental Medicine	Dr. Irving Glickman, Director Division of Post-Graduate Studies, 136 Harrison Ave. Boston, Mass.
Jan. 9-13	Full Denture Implants	Tufts School of Dental Medicine	Dr. Irving Glickman, Director Division of Post-Graduate Studies, 136 Harrison Ave. Boston, Mass.
Jan. 16-18	Splinting in Periodontics	Tufts School of Dental Medicine	Dr. Irving Glickman, Director Division of Post-Graduate Studies, 136 Harrison Ave. Boston, Mass.
Jan. 22	Orthodontics	Temple University	Dr. Louis Herman, Dir. of Postgraduate Studies, Temple University School of Dentistry, 3223 North Broad St., Philadelphia, Pa.
April 9-13	Periodontology	Tufts School of Dental Medicine	Dr. Irving Glickman, Director Division of Post-Graduate Studies, 136 Harrison Ave. Boston, Mass.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

L'orthodontie préventive*

par LEO RATELLE, D.D.S., Montréal

L'orthodontie préventive est une science qui traite de la prévention et de la correction précoce de la malocclusion dentaire ainsi que des malformations maxillo-faciales qui surviennent au cours de la croissance. Elle vise avant tout à maintenir une bonne articulation déjà existante, or à créer des circonstances favorables à la correction par la nature de certaines irrégularités, avant que celles-ci soient irréductibles; ce, contrairement à l'orthodontie curative, dont le rôle est de corriger des malformations déjà existantes, à l'aide d'appareils spécifiques.

Pour parler d'orthodontie préventive, nous devons non seulement connaître les causes qui ont pu produire les malformations (nous y reviendrons tantôt), mais aussi étudier les 4 périodes d'évolution et de formation dentaire chez l'homme, c'est-à-dire:

10.—La période folliculaire, qui débute dans la vie intra-utérine.

20.—La période de la dentition tempo-

raire, qui s'étend à peu près du 6e mois jusqu'à l'âge de 3 ans.

30.—La période intermédiaire, qui va de l'éruption de la dernière molaire temporaire à la première molaire permanente, dite dent de 6 ans.

40.—La période de la dentition permanente, comprise entre l'éruption de la première molaire permanente et l'éruption de la dernière dent, appelée dent de sagesse.

LA PERIODE FOLLICULAIRE

La période folliculaire est le premier stage de la formation des dents. En effet, dès le début de la gestation, l'alimentation de la mère influence la dentition embryonnaire de son enfant. Elle lui procure tous les matériaux qui serviront à l'édification complète du squelette, de la charpente et des dents de son enfant. La première mesure d'orthodontie préventive consiste donc à voir à ce que la mère apprenne et mette en pratique les règles alimentaires canadiennes, principes fondamentaux d'une bonne nutrition. Nous n'appuierons pas davantage sur ce sujet de la nutrition,

Séminaire de l'Ecole d'Hygiène de l'Université de Montréal, 3 mars 1955.

qui a déjà été traité ici même par notre confrère, le docteur Guy Boisclair.

LA PERIODE DE LA DENTITION TEMPORAIRE

A sa naissance, l'enfant n'a pas encore de dents. En effet, les dents de sa première denture feront éruption seulement vers le 6e mois. Il faudra donc le nourrir soit au sein maternel, soit au biberon. C'est à cette période de l'allaitement que l'on peut appliquer une des mesures d'orthodontie préventive des plus importantes. Il est, en effet, prouvé que c'est au cours de la période d'allaitement qu'un grand nombre de déformations maxillo-faciales se préparent. Ces déformations se produisent lors de l'allaitement au biberon.

Lorsque la maman ne peut donner le sein à son enfant, il faut bien recourir à d'autres moyens, c'est-à-dire aux biberons et aux sucres. Or, il se vend toutes sortes de sucres des grandes, des moyennes, des petites, des épaisses, des minces, des longues, des courtes. Neuf fois sur dix, la mère achète la suce mince et longue, en forme de doigt de gant . . . et très rares sont les mamans, je dirais même les médecins et les infirmières, qui prévoient les dégâts que peuvent causer ces sucres en fait de déformations de la face et des maxillaires. C'est peut-être en pensant à cela que le célèbre docteur Charles Mayo, de Rochester, dans le "Journal of American Dental Hygienists Association" (page 130, Vol. 14-1940) disait: "All dentists should know much more about medicine; physicians and surgeons should know much more about dentistry."

Voyons maintenant ce qui se passe lors de la tétée. Si nous approchons le biberon près des lèvres de l'enfant, celui-ci prend la suce en ouvrant la bouche, contracte les orbiculaires faisant ainsi sortir le lait. Cette contraction des muscles des lèvres sur la mince couche de caoutchouc arrête la coulée du lait. Vient alors le phénomène de la déglutition. Pour avaler, l'enfant doit porter sa langue au palais. Normalement, la pression de la langue s'exerce uniformément sur toute la voûte palatine. Par contre, la présence d'une suce longue accroît la pression au centre

du palais, d'arrière en avant, sur toute la longueur de la suce. Ce petit manège se répète des centaines et des centaines de fois par jour. La pression de la langue ainsi exercée sur la voûte palatine est équivalente à une livre $\frac{3}{4}$ chaque fois. Sous cette pression constante, le palais s'écrase d'arrière en avant et épouse la forme d'un "V." Ce V entraîne avec lui les 2 portions postérieures du maxillaire supérieur, rétrécissant ainsi l'arche dentaire. Quand les dents apparaîtront sur ces crêtes alvéolaires rétrécies, elles ne pourront pas s'articuler parfaitement avec celles du bas. Il y aura par conséquent malocclusion. Ce problème des sucres a fait l'objet de nombreuses études. Si vous me demandez quelle forme doit avoir une suce, je vous répondrai que la suce idéale devra se rapprocher le plus possible de la forme anatomique.

Comme autre mesure d'orthodontie préventive, à la période de l'allaitement, signalons que la mère peut éviter des déformations maxillo-faciales à son enfant en alternant la position de celui-ci dans le moise. La pesanteur de la tête du bébé couché toujours du même côté exerce une pression sur la joue et les maxillaires, entraînant une déformation inilatérale. "Lorsque la bouche des bébés n'est pas l'objet d'une constante hygiène, les deux tiers de la figure se développent difficilement et l'apparence du visage en est par la suite altérée." (Dr. T. L. Marsh, Health League of Canada). C'est encore au cours de cette période que s'accomplit un travail énorme dans les maxillaires du jeune bébé. Que de merveilleuses transformations et d'admirables phénomènes de croissance s'opèrent dans ce court laps de temps. C'est l'évolution successive et complète des 20 dents de lait.

LA PERIODE INTERMEDIAIRE

Cette période se situe à partir de 3 ans, alors que toutes les dents temporaires ont fait éruption; elle se continue jusqu'à l'âge où la molaire de 6 ans fait normalement son apparition. On n'accorde pas toujours à cette première denture toute l'importance qu'elle mérite.

Le groupe d'âge pré-scolaire (2½ à 6 ans) est trop souvent ignoré par les parents. La croissance et l'évolution des premières dents sont aussi importantes à l'âge pré-scolaire qu'elles le sont pour l'adolescent et l'adulte.

Chaque dent de lait doit être conservée à sa place, saine de carie, jusqu'à ce qu'elle soit remplacée par les dents permanentes. Des dents saines créent chez l'enfant un confort mental et physique favorables. La plus sûre formule de prévention à ce stage pré-scolaire serait de conduire les très jeunes chez le dentiste vers l'âge de 2 ans et demi à 3 ans. S'il y a des imperfections dans l'émail des dents, le dentiste pourra facilement les obturer à peu de frais. Chaque enfant devrait être examiné au moins tous les 6 mois. C'est un travail éducatif et de collaboration entre les parents et le dentiste. Dans le jeune âge, l'enfant n'est pas craintif et avec une saine compréhension de l'âme enfantine, il est facile et intéressant de bien faire l'éducation dentaire de la génération qui pousse.

La perte d'une ou de plusieurs dents temporaires détruites par la carie cause l'inclinaison convergente des dents proximales, à moins que le dentiste fixe un petit appareil de rétention qui contribuera à conserver l'espace nécessaire à la poussée normale de la dent permanente. Si on néglige de le faire, petit à petit, cet espace inter-dentaire diminuera et nous aurons, comme conséquence immédiate, une malocclusion à brève échéance, et plus tard une chevauchée de dents permanentes irrégulières.

L'extraction prématurée des dents temporaires est sans contredit une des grandes causes de malocclusion. Mais il y a aussi d'autres causes, notamment les mauvaises habitudes acquises dans le jeune âge comme, par exemple, le suçement du pouce (ou de tout autre doigt). Le suçement du pouce est trop souvent considéré par les parents comme une gentille petite manie qui se passera avec l'âge. Malheureusement, quand la gentille petite manie sera passée, les dégâts seront

déjà faits. Cette néfaste manie du suçement de pouce est une des plus grandes causes de déformation de la voûte palatine et de l'arcade dentaire de l'enfant. Laisser un enfant persister dans cette habitude a pour résultat de donner à cet enfant une arcade en zig-zag, une voûte palatine en ogive et une face en carène de navire. Vous avez certainement entendu dire que l'enfant avec des dents poussées en avant ressemble à son grand-père ou à sa grand-mère. Ce n'est pas l'hérédité qui est en cause mais les mauvaises habitudes de l'enfant.

Ces malocclusions s'expliquent par la malléabilité des os de l'enfant. Faisons un tour d'horizon et nous constaterons que certains peuples primitifs avaient deviné toutes les ressources de la malléabilité des os. Les Indiens font tout ce qu'ils peuvent pour que leurs enfants aient la tête pointue. C'est par des exercices de pression délicate et souvent répétées que la tête de leurs bébés s'allonge en prenant la forme étrange que nous leur connaissons. Les femmes de Burma se reconnaissent dans une foule par leur cou exagérément long. La technique consiste à entourer le cou de leurs jeunes filles d'anneaux superposés à des intervalles réguliers . . . et par cet artifice, la croissance de la colonne vertébrale est démesurément allongée. Qui ne se souvient pas des pieds des femmes chinoises, qui encore au début de ce siècle, entouraient les pieds des petites filles de bandellettes très serrées. Les conséquences de cette méthode déformaient considérablement le pied en largeur et en longueur . . . marque de suprême élégance et de raffinement féminin.

Ces quelques exemples démontrent bien que si les Chinois, les Indiens, les Birmans ont pu obtenir de semblables déformations, il n'est pas étonnant que l'enfant, à la suite de mauvaises habitudes, réussisse sans le vouloir les déformations faciales qu'amène nécessairement une pression trop forte sur la région antérieure de la voûte palatine et sur la face interne des incisives supérieures.

PERIODE DE LA DENTURE PERMANENTE

Cette période s'étend de l'âge de 6 ans jusqu'à 12 ans. Pour toutes fins pratiques, on peut dire que cette période va jusqu'à l'apparition des 3e molaires ou dents de sagesse.

Le Département de la Santé et du Bien-Être National nous affirme que 4 personnes sur 5 qui ont des dents irrégulières auraient pu avoir des arcades dentaires plus en harmonie avec leur faciès, si elles avaient été mieux renseignées. Bien que la plupart de ces déformations se soient produites dans l'enfance, il n'en est pas moins vrai que nous voyons un grand nombre de malocclusions qui surviennent dans la période dite de la denture permanente. A cet âge, l'orthodontie préventive aura à faire face à peu près aux mêmes causes de malocclusion qu'aux autres périodes précédentes: Habitudes vicieuses, extraction prématurée de certaines dents temporaires, extraction de la molaire de 6 ans, rétention induite de certaines dents temporaires.

On ne saurait trop insister sur l'importance de la molaire de 6 ans. Elle est la clé de l'articulation. Sa poussée normale fait allonger le maxillaire et sert de guide pour la position normale des autres dents permanentes. Très souvent, cette dent est confondue avec les dents de lait et négligée à un point tel que sa conservation devient presque impossible. Cet organe dentaire si important pousse toujours en arrière de la 2e molaire temporaire: c'est la 6e dent en partant de la ligne médiane. En orthodontie préventive, nous considérons qu'il est essentiel que les dentistes tentent tous les efforts possible pour assurer la conservation de cette dent de 6 ans.

Toutes ces habitudes que nous venons de signaler sont souvent difficiles à corriger surtout à l'âge de deux à six ans. Nous y parviendrons avec de la persévérance et le recours à différents dispositifs. Comme exemple, la succion du pouce pourrait se corriger par l'emploi d'une mitaine de coton fort que nous attachons au poignet. La meilleure méthode pour

la correction des habitudes vicieuses est encore la surveillance constante des enfants.

Les mauvaises habitudes ne sont pas l'apanage de la première enfance. Le mordillement des lèvres, des crayons, la mauvaise posture à l'école sont des imperfections physiques qui ont leur répercussion dans l'adolescence. Pour que la prophylaxie de ces habitudes soient efficaces, les parents, les dentistes, les éducateurs devront user de persuasion, de bons conseils et d'encouragement . . . tout en étant d'une douce fermeté. Au cours d'une étude comme celle-ci, il importe de mentionner le rôle néfaste de la respiration buccale causée par des végétations adénoïdes hypertrophiées dans certaines déformations maxillo-faciales.

Le rôle des adénoïdes dans le déséquilibre respiratoire est bien connu des hygiénistes ainsi que leurs effets morbides. Chatelier les résume comme suit: "La voûte palatine est très élevée et très étroite, au point que certains enfants peuvent à peine en toucher le fond avec la langue. L'arcade supérieure présente toujours une proéminence vers l'avant et cette protusion de la région antérieure s'accroît encore par la projection en avant de l'os incisif et des dents qu'il supporte. De l'arcade supérieure en protusion, s'engendre, une déformation articulaire dans le maxillaire inférieur et si celui-ci ne subit pas de déformation primitive, par contre, le rapport inter-dentaire reste profondément altéré avec rétrusion inférieure."

Dans la respiration normale, le tonus musculaire maintient les dents à leur place naturelle. La pression de la langue agit comme modérateur sur la face interne des dents et pousse celles-ci vers l'extérieur. La pression des joues et des lèvres exerce également une force sur les faces externes des dents et pousse celles-ci vers l'intérieur: Ces deux forces se neutralisent et permettent aux dents d'évoluer normalement. Chez le respirateur par la bouche, le maxillaire supérieur ne se développe pas et reste rétréci. Il

en est de même pour la mandibule. La bouche restant ouverte, toutes les dents du bas se déplacent vers l'intérieur.

Je cite — "Les végétations adénoïdes, outre les anomalies du faciès et les déformations thoraciques qu'elles entraînent, rendent l'effort intellectuel difficile et l'attention mal tenue." Dr Gilbert Robin.

De beaux enfants s'enlaidissent avec les années parce que les parents furent inconsciemment les premiers artisans de la transformation du faciès de leur progéniture . . . Menton cassé . . . contour de la figure allongée . . . Menton en galoche (prognatisme) . . . absence de menton (opistognatisme). Vous avez certes constaté les mêmes défauts dentaires dans les écoles rurales aussi bien qu'urbaines . . . Figures inexpressives, hébétées . . . à la bouche entr'ouverte.

En plus des mesures prophylactiques recommandées par l'orthodontie pour la prévention et la correction des défauts dentaires, résumons à larges traits tous les moyens employés pour prévenir les malocclusions.

—Les dents temporaires cariées, qui ne sont pas conservées par l'obturation, sont la principale cause des malocclusions de la denture permanente. Par conséquent sauve-garde de la denture de l'enfant.

—Si une ou deux dents de lait sont extraites, l'usage d'un appareil de retention permettra la poussée normale de la dent permanente.

—Conservation de la dent de six ans.

—Ablations des végétations adénoïdes hypertrophiées.

—L'orthodontiste et le praticien général doivent collaborer afin de dépister les malocclusions de la première denture et organiser un traitement précoce.

Nous corrigerions de nombreux défauts . . . et surtout . . . nous les éliminerions, si l'éducation des nôtres était mieux faite. De même si les parents, les classes professionnelles, les éducateurs étaient plus avertis, des centaines d'enfants ne s'en iraient pas dans la vie avec des figures qui ne leur appartiendraient pas.

L'orthodontie préventive met à notre portée les Rayons X qui nous permettent de prévenir par un dépistage hâtif les défauts dentaires dont nous venons de parler. En plus d'être une science, l'orthodontie a pour but de protéger la santé dentaire et la beauté de la race.

Le public mieux éclairé ne saurait ignorer plus longtemps ce prodigieux effort d'éducation qui déterminera, es périons-le, l'une des transformations sociales de demain.

Nouvelles des Sociétés de la Province de Québec

Société Dentaire des Trois-Rivières

Le Comité Exécutif de la Société Dentaire des Trois-Rivières pour l'année académique 1955-1956 se composera des membres suivants:

Président, Roland Baribeau; 1er vice-président, Yves Dufresne; 2e vice-président, Jean Therrien; secrétaire, René Millette; trésorier, Gabriel Gascon.

La gala annuel de la Société Dentaire des Trois-Rivières aura lieu samedi, le 12 novembre, à l'Hôtel St-Maurice. Le nombre des invités est limité à 250 personnes et cette fête constitue l'événement social le plus important de l'année pour cette société.

Société Dentaire de Montréal

Les membres de la Société Dentaire de Montréal ont élu, en mai dernier, les officiers suivants pour l'exercice 1955-1956.

Président, Roland Gendron; 1er vice-président, Gérard de Montigny; 2e vice-président, Gilles Baril; secrétaire, Jean-Paul Lemieux; secrétaire-adjoint, Fernand Lalonde; trésorier, Florent Thériault; bibliothécaire, Paul Manseau; délégué au collège des Chirugiens-Dentistes, Gaston Lajoie; conseillers, Antoine Raymond, Doris Graton, Vincent Tremblay, Jean-Paul Lussier, Roger Gagnon; directeurs, Eugène Lussier, Roger Charette, Louis Lépine.

Congrès dentaire provincial

Le deuxième congrès dentaire provincial aura lieu à Québec le 31 mai, 1er et 2 juin 1956. A la suite du succès considérable du premier congrès provincial tenu, cette année, aux Trois-Rivières, au mois de juin, les trois principales sociétés dentaires de la province de Québec n'ont pas hésité à unir leurs efforts pour continuer cette initiative.

L'importance de l'hygiène dentaire et son intégration dans le programme d'hygiène publique

par YVES LAFLEUR, D.D.S., St-Hyacinthe

Tout comme l'hygiène générale est une science qui traite des milieux où l'homme est appelé à vivre, et des moyens à prendre pour les modifier dans le sens le plus favorable à sa santé et à son bien-être, ainsi l'hygiène dentaire est une science qui enseigne les moyens de prévention pour sauvegarder la santé dentaire de l'enfant et de l'adulte.

Ceux qui s'intéressent aux problèmes de l'hygiène publique ont certes réalisé que l'hygiène dentaire a beaucoup progressé au cours des dernières décades. L'importance de l'hygiène dentaire est maintenant reconnue par tous les hygiénistes et cette science a conquis sa place dans le grand tout de l'hygiène publique.

Les maladies de la bouche et des dents existent depuis toujours. Les abcès et la carie dentaire, les maladies périodontaires étaient connus au temps des Pharaons. Dans la Chine antique, l'empereur Hung-Ti, qui régnait en l'an 2693, avant Jésus-Christ, mentionne dans ses écrits 9 maladies dentaires différentes et conseille de nombreuses prescriptions pour soulager les maux de dents. Chez les Grecs, Hippocrate consacre 32 paragraphes à la dentition. En parcourant son oeuvre, il est facile de réaliser que ce grand médecin de l'antiquité apprécia l'importance des dents et était familier avec les maladies dentaires. Depuis des millénaires, selon le docteur Raymond Boissier, stomatologiste des hôpitaux de Paris, "les savants n'ont pas cessé d'étudier les maladies dentaires et de proclamer les dangers d'une bouche et de dents malsaines." Tous les maîtres, à partir de l'époque gréco-romaine, en passant par les Orientaux et les médecins arabes, ou les illustres professeurs des jeunes universités médiévales d'Occident . . . tous jusqu'aux contemporains n'ont cessé de mener le bon com-

bat en faveur de l'hygiène dentaire.

C'est avec Pierre Fauchard, dentiste français qui a vécu à Paris de 1678 à 1761, que commence ce que l'on pourrait appeler la dentisterie moderne. Les travaux accomplis par Fauchard, tant dans le domaine préventif que curatif en art dentaire, l'ont fait surnommer "le Père de la Dentisterie." A la fin du 19ième siècle (1895) se dessine l'ère scientifique en art dentaire. Il y a environ 60 ans, W. D. Miller, un dentiste américain, établi à Berlin et travaillant dans le laboratoire de Koch, démontre que les acides, formés par l'action de certains organismes microbiens sur les hydrates de carbone, dissolvent le contenu minéral de l'émail et de la dentine . . . et causent ainsi la carie dentaire.

Bon nombre de médecins et de dentistes croyaient déjà à ce moment que la santé dentaire exerçait une influence considérable sur la santé générale. Mais on ne portait pas beaucoup d'attention à leurs opinions. Ce n'est qu'après que William Hunter, célèbre médecin anglais, eut donné sa mémorable conférence sur le "Rôle de l'aseptie et de l'antiseptie en médecine", à Montréal même, le 2 octobre 1910, à l'Université McGill, que les médecins abandonnèrent leur parfaite indifférence envers les problèmes dentaires pour se ruer à l'extrême opposé. Hunter ayant dit qu'un grand nombre de maladies: anémie, arthrite, néphrite, etc. pouvaient être attribuées à des infections de la bouche et des dents, on chargea ces dernières de tous les péchés d'Israël . . . et toutes les maladies, à bien diagnostiquer, étaient causées par les dents. Le terme "Foyer d'infection" (Focal infection) connu du jour au lendemain une très grande popularité. Billings, les frères Mayo, Sir William Osler remirent les choses au

point, tout en accordant à la santé de la bouche son importance évidente par rapport à la santé générale.

C'est au début du 20^{ième} siècle que l'on a commencé à organiser des programmes d'hygiène dentaire et que le public a véritablement pris connaissance de la question. Devant une demande pressante du peuple pour des soins d'hygiène dentaire, la philanthropie privée et les agences ont répondu au meilleur de leurs connaissances.

A la suite de nombreuses études faites des problèmes soulevés par le développement et la gravité des maladies dentaires, il faut de toute évidence se rendre compte de l'importance de l'hygiène dentaire. Les maladies dentaires posent un problème d'hygiène publique. Leur distribution géographique est universelle. Elles ne respectent ni l'âge, ni le sexe, ni le status économique. Leur universalité est reconnue et on calcule que la plupart des individus en sont atteints d'une façon ou d'une autre au cours de leur vie. Même, si ces maladies n'occasionnent que rarement la mort, elles n'en causent pas moins beaucoup de souffrances et affectent souvent la santé générale. De nombreuses enquêtes épidémiologiques sur les maladies dentaires en font foi. Nous signalerons ici 3 de ces enquêtes épidémiologiques: celle de Hagerstown, Maryland, (race blanche), celle faite dans le comté de Nicollet, Minnesota, et celle de Baltimore, Maryland (race noire). Ces études ont établi la fréquence des maladies selon l'âge, le sexe, la couleur, les occupations, les habitudes, le climat, l'eau d'alimentation, le status sanitaire des populations soumises à ces études.

La carie dentaire atteint 90% de la population. Les maladies péri-dentaires causent la perte d'un plus grand nombre de dents que la carie elle-même. Les irrégularités des dents et des maxillaires occasionnent beaucoup d'ennuis tant psychologiques que physiologiques. Les becs de lièvre, les palais perforés ont une incidence de 1 par 800 naissances vivantes. Le cancer de la bouche représente 8%

de tous les cas rapportés. Au point de vue économique, les désordres d'origine dentaire représentent un drain désastreux dans les budgets familiaux. Voilà autant de problèmes importants auxquels l'hygiène dentaire doit apporter une solution.

La santé dentaire étant significative au point de vue de la santé publique, il s'ensuit qu'un parfait équilibre physique n'est possible qu'avec une assimilation parfaite des aliments . . . et celle-ci ne peut se faire qu'avec un système dentaire à la hauteur de sa tâche. Puisqu'il en est ainsi, il s'ensuit logiquement qu'on doit faciliter le développement normal du système dentaire et le protéger contre les maladies dont il peut être l'objet. C'est le devoir de l'hygiène dentaire.

L'hygiène dentaire est autant la responsabilité de la communauté que de l'individu. Lorsque l'individu ne veut pas, et plus souvent, ne peut pas s'acquitter de ses responsabilités, il est du devoir des services de santé publique d'y pourvoir. Pour arriver à ces fins, il faudrait que l'hygiène dentaire fasse partie intégrante d'un service de santé publique. "The function of a state health department," dit Smillie, "is to preserve the health of all the people within its border." Partant de ce principe, on peut affirmer que la fonction d'un service d'hygiène dentaire publique est de sauvegarder la santé dentaire de toute la population de son territoire.

Les mots "SAUVEGARDER LA SANTE DE TOUTE LA POPULATION" ont aujourd'hui une signification beaucoup plus large qu'autrefois. Il ne s'agit plus de compiler seulement des statistiques vitales ou d'abaisser des taux de mortalité: un nouveau concept de ce qu'est la santé publique a pris naissance au cours des dernières années. Les économistes, les sociologues, les hygiénistes, les hommes politiques ont tour à tour fait des déclarations qui indiquent bien le désir actuel de voir s'élaborer des programmes bien précis d'hygiène publique. L'hygiène dentaire a sa place dans l'élaboration de ces programmes. "Dental Hygiene," a dit Sir William Hunter, "is as important to the

public as any other single thing in the whole range of hygiene."

Si un service d'hygiène doit être en mesure de faire face aux problèmes posés par les maladies dentaires, il devra, pour être efficace, pouvoir agir en étroite collaboration avec les autres divisions qui composent un service de santé publique, tels Ecole d'Hygiène, unités sanitaires, cliniques d'hygiène maternelle, services d'hygiène scolaire, etc.

Pourvu d'un personnel compétent et qualifié, un service d'hygiène dentaire publique, devrait être une division autonome d'un service d'hygiène publique. Et le directeur de cette division autonome, un dentiste-hygiéniste, devrait être directement responsable au chef du service de santé publique. Aux Etats-Unis, plus de la moitié des états ont établi une division d'hygiène dentaire autonome et la tendance à faire la même chose s'accroît dans les autres états. Plusieurs provinces du Canada ont aussi leur division dentaire autonome, notamment la Nouvelle-Ecosse, le Saskatchewan, l'Alberta. Tout récemment, à Montréal, le Service de Santé vient de faire de la division d'hygiène dentaire un service indépendant responsable directement au chef du Service de Santé. Notre confrère, le docteur Bouillon, dentiste-hygiéniste gradué de Columbia, à New York, est le premier à occuper ce poste.

Un service d'hygiène dentaire fonctionne mieux lorsque les dirigeants de ce service ont une certaine indépendance. Cette formule autonomiste offre de nombreux avantages. Le directeur de l'hygiène dentaire est plus en mesure de diriger et surveiller l'application du programme d'hygiène dentaire, en collaboration avec les districts sanitaires. Il peut plus facilement co-opérer avec les médecins, les hygiénistes, les infirmières-hygiénistes, les dentistes, les éducateurs, rédiger et publier tous les rapports nécessaires, utiliser amplement les services de nursing, d'éducation, de démographie, de laboratoire, de génie sanitaire du service de santé. Il aura aussi une plus grande liberté pour faire valoir son programme sur

un pied d'égalité avec les directeurs des autres divisions. Si la division d'hygiène dentaire n'est qu'une sous-division d'un autre service, il devient difficile d'accomplir une intégration parfaite.

Selon la Chronique de l'Organisation mondiale de la Santé, "the qualified dental practitioner is the first essential in planning, organizing and administering a dental health program." Pour aider le directeur de la division dentaire, il faudra des dentistes praticiens qualifiés en hygiène publique. Ils seront aidés dans leur travail par des services auxiliaires publics, semi-publics, comme les infirmières-hygiénistes spécialisées en hygiène dentaire. Ces hygiénistes pourraient être entraînées à administrer certains traitements sous la surveillance du dentiste. L'entraînement des auxiliaires dépendra en grande partie des conditions socio-économiques, du niveau éducationnel et des besoins d'hygiène dentaire de la population.

Il est difficile de parler d'un programme d'hygiène dentaire sans mentionner les soins dentaires proprement dits. Ils pourront être de 2 sortes; soins curatifs, soins préventifs. Dans ce domaine, il pourra y avoir une grande élasticité, selon les besoins, les ressources, le degré de développement de la population. La formule de ces soins pourra aussi varier, allant d'un système de pratique dentaire privée jusqu'à un système entièrement contrôlé par les pouvoirs publics. Un juste milieu serait l'idéal; l'initiative privée ou semi-privée acceptant ses responsabilités, les pouvoirs publics suppléant la où c'est nécessaire.

Dans le développement d'un système efficace d'hygiène dentaire publique, où il ne serait pas possible, selon toutes probabilités, d'étendre les services dentaires à tout le monde, il faudrait établir certaines priorités dans les services:

- 1) soulagement de la douleur et de l'infection aiguë;
- 2) soins dentaires aux enfants d'âge pré-scolaire, sous forme de prévention et de traitements;
- 3) soins dentaires aux femmes enceintes;
- 4) éducation et traitement des adultes.

Souignons en passant que c'est au cours de

l'enfance que l'on peut plus facilement et plus économiquement exercer un contrôle sur les maladies dentaires. Et tout programme d'hygiène dentaire, pour être efficace, devra tenir compte de ce fait.

Selon les normes de l'Organisation mondiale de la Santé, cependant, la tâche la plus importante d'un service d'hygiène dentaire publique, c'est l'éducation de la population: enseigner au public les principes fondamentaux d'une bonne nutrition, de l'hygiène buccale, et de tous les autres principes qui ont pour objet la prévention des désordres d'origine dentaire. La façon de répandre l'éducation dentaire devra avant tout, viser à faire reconnaître l'importance des problèmes de santé dentaire, aider à l'élaboration des mesures à prendre pour résoudre ces problèmes, et encourager tous et chacun à prendre leurs responsabilités.

Tout en admettant que les moyens de communication avec la masse par la radio, les publications, les films, etc., sont de bons média à utiliser en éducation dentaire, les plus grandes autorités affirment que le meilleur moyen—et le premier en importance—sera d'abord d'éduquer les éducateurs, c'est-à-dire, les médecins, les dentistes, les infirmières, les instituteurs. Toutes ces personnes, une fois bien renseignées et convaincues des avantages de l'hygiène dentaire, donneront plus que tous les autres moyens mis ensemble pour promouvoir la cause de l'hygiène dentaire.

Malgré leur timidité de la première heure, les services de santé admettent qu'ils constituent la véritable agence pour donner les soins dentaires aux groupes considérés comme étant du domaine de la responsabilité publique. Les programmes d'hygiène dentaire, bien qu'étant une nouveauté dans la famille des activi-

tés de l'hygiène publique, prennent rapidement leur place comme partie importante d'un programme complet d'hygiène publique.

La profession dentaire reconnaît ses responsabilités. Elle désire étendre le champ de ses soins préventifs et c'est avec plus d'instance que jamais que cette profession va de l'avant pour éduquer la population, tant par ses propres moyens que par l'intermédiaire des services de santé publique.

Résumons à larges traits les objectifs d'un programme d'hygiène dentaire: 1) prévenir et circonscrire les maladies dentaire; 2) créer chez l'enfant de saines, habitudes d'hygiène dentaire; 3) réduire la nécessité des soins orthodontiques; 4) diminuer les besoins de traitements périodontiques; 5) assurer une saine denture aux générations futures.

RIEN au monde n'est aussi puissant qu'une idée dont l'heure est arrivée. L'heure de l'hygiène dentaire dans le domaine de la santé publique a sonné. Il ne saurait plus être question aujourd'hui d'un travail isolé et sporadique, uniquement de la part de ceux qui se sont spécialisés dans le traitement des maladies dentaires. Le temps est venu où médecins, épidémiologistes, spécialistes en hygiène maternelle et infantile, infirmières hygiénistes, biométristes, ingénieurs sanitaires doivent s'unir aux dentistes pour lutter, selon les méthodes reconnues en hygiène publique pour prévenir les maladies dentaires. Grâce à cette belle collaboration, l'hygiène pourra remporter une autre victoire sur la maladie.

Tout comme le mot gloire, le mot succès s'écrit toujours en collaboration.

1745 Girouard

Nouvelles de l'Association

Nomination du docteur James Zimmerman, de Calgary

Le secrétaire de l'Association dentaire d'Alberta nous fait parvenir l'avis suivant: "La présente est pour certifier qu'à une réunion du Bureau des Gouverneurs de l'Association dentaire d'Alberta, le docteur James Zimmerman a été nommé représentant de la province d'Alberta au Bureau des Gouverneurs de l'A.D.C. Sa nomination prendra effet après l'élevation du docteur R. R. McIntyre à la présidence de l'Association dentaire canadienne. (signé) R. A. Rooney, secrétaire".

La Nouvelle-Ecosse augmente son octroi de 1955

A la réunion annuelle de l'Association dentaire de Nouvelle-Ecosse, tenue le 5 juillet dernier, il a été unanimement décidé de hausser l'octroi annuel de chacun des membres à l'Association dentaire canadienne à \$20.00, pour l'année 1955.

"Facts on Fluoridation", 3e édition

On peut se procurer une nouvelle édition de ce pamphlet, qui contient de nouveaux renseignements. Le Comité des Recherches s'efforce de fournir à tous ceux qui tentent de promouvoir cette mesure de santé publique tous les renseignements les plus exacts et les plus au point. Copie unique: gratuite. En certaines quantités: .25, par copie.

Le plan de la Croix-Bleue inclura les veuves

On a réussi à continuer aux veuves des dentistes qui, au temps de leur mort, étaient membres de la Croix-Bleue de l'Association dentaire canadienne, la même protection pour elles et leurs enfants.

34% des membres de l'A.D.C. font partie du plan de la Croix-Bleue

Environ 1877 membres de l'A.D.C. font maintenant partie du plan de la Croix-Bleue de l'A.D.C. De ce nombre, 799 ont ajouté les risques médicaux et chirurgicaux.

Octrois pour la recherche dentaire

L'Association des Assureurs-Vie du Canada ont donné des octrois se chiffrant à \$50,000 pour des projets de recherches médicales et dentaires.

Six de ces octrois seront consacrés à des études sur la carie dentaire, les maladies de gencives et les malformations dentaires; elles seront entreprises par la division des recherches de la faculté dentaire de l'Université de Toronto.

De plus, on a annoncé des octrois pour des études sur les glandes salivaires au

Hamilton College, deux études sur le diabète à l'Université Queen's, un travail sur les maladies à virus à l'Hôpital des Enfants malades de Toronto et pour amplifier le travail commencé récemment par l'Association médicale canadienne sur la pratique générale.

Notes sur la fluoruration

—Nanaimo, C.B.—La ville de Nanaimo fluorurera son eau de consommation. Le grand Nanaimo comprend la ville elle-même et quatre districts, Northfield, Chase River, Harewood et Departure Bay.

—Prince George, C.B.—Selon des nouvelles de journaux, cette ville sera la première de cette province à fluorurer son eau de consommation.

Sous-section dentaire créée par l'Organisation mondiale de la Santé

Le rapport ci-joint fut présenté à la 43e réunion de la Fédération dentaire internationale, tenue à Copenhague, Danemark, du 14 au 20 août 1955:

Rapport des délégués de F.D.I. à la 8e réunion de l'Organisation mondiale de la Santé, tenue à Mexico, du 10 au 27 mai 1955.

"L'Organisation mondiale de la Santé tint son assemblée à Mexico du 10 au 27 mai 1955 et au-delà de 70 pays y étaient représentés.

La première réunion eut lieu le mardi, 10 mai.

Le sous-signé agissait comme conseiller de la délégation des Etats-Unis et, en compagnie du docteur Roberto Ruff, de Mexico, comme observateur pour la Fédération dentaire internationale.

Je fus nommé au comité des programmes et du budget et, par ce fait, eus le privilège d'assister aux discussions portant sur les programmes et sur le budget et d'y participer.

Pour mieux comprendre la procédure suivie, il est peut-être nécessaire d'en faire un court exposé; tout nouveau projet doit passer par trois unités ou trois organisations:

- 1) le Comité exécutif;
- 2) les comités:
 - a) le comité d'administration, des finances et de législation;
 - b) le comité des programmes et du budget
 - c) les comités spéciaux;
- 3) l'assemblée générale.

Le Comité exécutif siège durant et pendant les séances et au cours de toute l'année. Une de ses principales fonctions est de préparer les programmes et le budget pour l'année à venir.

Le comité d'administration, des finances et de législation s'occupe de questions relevant de son titre.

Ainsi, le comité des programmes et du budget étudie la question des programmes et du budget et ses attributions sont bien spécifiques. Le comité considère les recommandations du Comité exécutif dans l'ordre général suivant:

- a) Une revue générale du programme d'activités proposé pour l'année suivante en tenant compte des fonctions générales de l'OMS.
- b) Une étude détaillée des items particuliers du programme pour l'année (1956).
- c) Rédaction des recommandations faites à l'assemblée générale sur le programme et le budget pour l'année suivante.

Je ne tenterai pas détailler toutes les questions qui entrent en jeu quand on discute de problèmes de santé qui embrassent le monde entier; je me contente de dire qu'il est question de considérations générales, qui sont des jalons vers des objectifs désirables comme celle des standards de vie.

Je me bornerai à des commentaires sur des problèmes qui regardent la santé dentaire. Il parut comme évident que le Comité exécutif et le directeur général avaient songé à doter les quartiers-généraux, à Genève, de renseignements sur des questions de santé dentaire, de façon à ce que tout pays puisse y avoir accès; à cet effet, on avait inscrit au budget une somme pour payer le salaire d'un dentiste à temps complet et d'un secrétaire à cette organisation.

Cette décision venait sans doute du désir de l'Exécutif de recommander pour 1956 un programme qui ait une envergure plus marquée et qui ait une répercussion plus grande sur les services de santé publique. La place qu'occupe la dentisterie dans la santé publique, comme l'avaient démontrée plusieurs mémoires soumis au Comité, ont sans doute influencé sa décision.

L'étude du programme général a suscité plusieurs remarques de la part de plusieurs pays. Parmi celles-ci, mentionnons l'intervention du docteur Martha Elliott du Children's Bureau of the United States. En parlant des bienfaits des services d'hygiène publique, le docteur Elliott, à ma suggestion, a touché des avantages que donneraient l'entrée des services de santé dentaires publics.

Plus tard, au cours de l'étude détaillée du programme pour 1956, la question des services publics de santé vinrent sur le tapis et j'eus le privilège de présenter le mémoire suivant au nom de la Fédération dentaire internationale:

"M. le Président,

Je vous remercie de m'accorder la faveur d'adresser la parole, en ma qualité d'observateur pour la Fédération dentaire internationale au sujet de l'établissement d'un sous-comité dentaire

aux quartiers-généraux de l'OMS. Je n'abuserai pas du temps que vous mettez à ma disposition pour repasser les motifs qui ont porté le directeur général et le Comité exécutif à inscrire au budget de 1956 une somme destinée à cette sous-section.

Nous constatons avec plaisir que cette initiative commence à une époque où des programmes dentaires prennent de plus en plus d'ampleur au sein de projets de santé destinés à 'faire atteindre aux nations le plus haut degré possible de santé' (charte de l'OMS).

L'établissement d'une telle sous-section permettra d'obtenir en tout temps l'avis d'experts sur des problèmes de santé dentaire, non seulement pour intégrer ces activités avec d'autres domaines similaires, tels que la nutrition, etc., mais aussi pour rendre disponibles aux pays intéressés l'expérience des autres et des solutions à leurs problèmes respectifs.

La classification des données sur l'efficacité des contrôles et des mesures préventives pour diverses maladies dentaires entreprises dans le monde entier, dans des conditions différentes, peut devenir pour cet organisme une contribution des plus essentielles.

La décision du directeur général de placer cette sous-section dans le domaine de la santé publique paraît être des plus logiques.

Merci, M. le Président."

Au cours de toute la discussion des programmes et du budget de 1956, on n'entendit aucune critique, ni aucune remarque au sujet de l'intégration de la santé dentaire dans le domaine de la santé publique.

Les programmes et le budget furent soumis par le comité des programmes et du budget, le 25 mai, tel qu'ils avaient été préparés par le Comité exécutif.

J'ai dû revenir aux Etats-Unis jeudi, le 26, et je n'ai donc pu assister à la séance générale tenue jeudi et vendredi, où on devait approuver définitivement les programmes et le budget. Toutefois, le docteur Ruff put assister à ces séances et me fit part que les programmes et le budget avaient été acceptés tels que présentés. Il put aussi assister à la première réunion du nouveau Comité exécutif (seizième réunion), lundi, le 30 mai, et il rapporte que l'Exécutif a commencé à donner suite aux décisions de l'assemblée générale sur cette question.

Depuis l'ajournement de l'assemblée de l'Organisation mondiale de la Santé, on a reçu une lettre du docteur Leonard A. Scheele, directeur du Service de Santé publique des Etats-Unis, dans laquelle il nous annonce que le docteur John Knutson, son assistant, doit partir dans quelques jours pour Genève, où, durant six mois, il aidera à l'organisation de la sous-section de santé dentaire aux quartiers-généraux de l'OMS.

Cette décision prouve que le programme dentaire avance à grands pas.

Respectueusement soumis,

juin 1955

O. W. Brandhorst"

Cotisation frauduleusement perçue

"Cher confrère,

Au début de cette année, j'ai appris qu'il existait à Londres un organisme appelé

'L'Institut Dentaire International.' Cet organisme sollicitait surtout les dentistes de langue espagnole pour obtenir une cotisation. La chose fut rapportée au Scotland Yard et, depuis, on fait part que cette organisation, agissait d'une façon frauduleuse et qu'actuellement ses dirigeants se trouvaient probablement à Paris. La police anglaise collabore avec celle de France pour poursuivre son enquête.

Je vous tiens au courant de l'affaire et vous demande d'insérer cette notice dans vos publications nationales pour avertir vos confrères de ne pas souscrire à cet organisme.

Bien à vous,
(signé) Gérard Leatherman
Secrétaire général
Fédération dentaire internationale."

Nominations pour l'Ontario

Le docteur W. J. Langmaid, d'Oshawa et le docteur M. V. J. Keeman, de Sudbury, ont été nommés représentants officiels de la province d'Ontario au Bureau des Gouverneurs de l'A.D.C. Le docteur C. M. Purcell a démissionné comme gouverneur. Ainsi l'Ontario aura cinq représentants au Bureau des Gouverneurs. D'après les règlements de l'A.D.C., chaque province a droit à un représentant par 500 membres et par une fraction de ce chiffre. L'Ontario a maintenant 2325 membres.

Erreurs dans les statistiques annuelles

Deux erreurs se sont glissées dans les statistiques au sujet du nombre des dentistes du Canada. Ces statistiques ont été publiées dans la livraison de mai du Journal.

Tableau 2—D'Ontario à l'Angleterre, on devrait lire 0, au lieu de 2.

Tableau 3—Au Nouveau-Brunswick, on devrait lire orthodontiste 1, chirurgien 0, au lieu d'orthodontiste 0, chirurgien 1.

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ÉDITORIAL

Les dentistes et l'impôt

Depuis quelques années, l'Association dentaire canadienne s'efforce auprès du Ministère du Revenu national, à Ottawa, d'alléger les impôts sur le revenu payés par les membres de la profession dentaire.

Les démarches entreprises par l'Association reposent sur la justice et, conjointement avec d'autres groupements professionnels, comme l'Association médicale canadienne, l'Association du Barreau canadien, les architectes, les notaires, les ingénieurs, etc. elle fait des représentations à Ottawa sur la situation faite aux dentistes au sujet de la taxation de leur fonds de retraite.

En effet, un salarié, qui contribue à un fonds de retraite, ne paie pas d'impôt sur la partie de son revenu qu'il consacre à cette caisse; tandis que le dentiste, qui voudrait se constituer une pension pour ses vieux jours, doit verser au gouvernement fédéral et provincial une taxe sur les sommes qu'il réserve pour ses rentes, puisqu'il est taxé sur la totalité de ses revenus, sans qu'on tienne compte de l'usage qu'il en fait. Les arguments invoqués par l'Association s'appuient sur les caractères mêmes de l'exercice de notre profession.

De nos jours, l'ouvrier ou le collet blanc, grâce à la puissance de son syndicat ou de son comité conjoint exerce son travail dans des conditions de plus en plus favorables: vacances annuelles rémunérées, fonds de retraite où contribuent l'employeur et l'employé (comme nous le disions, la cotisation de l'employé n'est pas taxable), nombre fixe de journées ouvrables réservées pour la maladie, assurance-chomage, indemnités pour les accidents du travail, etc. Le dentiste, au contraire, n'a aucune protection indépendante de son vouloir contre toutes ces éventualités; il doit subir seul tous ces chocs, sans le secours de son employeur, ni de l'Etat. Et pourtant, le dentiste, comme tous les autres professionnels du domaine sanitaire, est responsable du plus grand bienfait d'une nation, la santé!

Les échanges de vues entre l'Association et le gouvernement fédéral n'ont encore rien donné sur la question du fonds de retraite; ils se poursuivent cependant et il faut espérer, comme le pensent les dirigeants de l'Association, que le gouvernement modifiera les lois de l'impôt au bénéfice des dentistes dans un avenir rapproché.

Le Ministère posera, à coup sûr, certaines conditions pour permettre au dentiste de ne pas payer d'impôt sur la partie de ses revenus qui sera consacrée à un fonds de retraite. Par exemple, pour éviter des complications interminables, le gouvernement voudra

traiter qu'avec un seul organisme et non pas avec chacun des individus; c'est-à-dire, que les dentistes n'auraient pas la faculté de s'inscrire à un plan de retraite dans une compagnie d'assurances de leur choix. Il faudra que tous adoptent la même formule, à la même adresse. Ensuite, la proportion du revenu réservé pour un fonds de retraite devra être raisonnable, c.-à-d. que le gouvernement fixerait le barème qui serait soustrait de l'impôt. Et, enfin, le revenu versé à un fonds de retraite devra provenir de l'exercice de la profession et non de placements étrangers à l'exercice dentaire.

Peu importe les modalités fixées, le dentiste devrait être soulagé d'un pourcentage de ses impôts, à l'égal des salariés. Le gouvernement n'est pas sans réaliser qu'un fonds de retraite, à longue échéance, signifie pour lui des épargnes, pour des motifs qu'il serait trop long d'exposer ici.

L'Association accomplit du bon travail et il faut lui souhaiter un succès égal à celui qu'elle a remporté quand il s'agissait de la déduction de la cotisation annuelle payée par les dentistes salariés et de l'abolition des droits de douane sur tous les articles importés au pays et qui servent à l'exercice de notre profession.

GERARD DE MONTIGNY.

Vient de Paraître:

“Le Traitement Chirurgical des Fractures des Maxillaires”

par G. GINESTET et L. MERVILLE

Préface de Monsieur le Médecin Général BERCHER
Un volume 132 pages—66 figures—1,000 frs. port en sus 80 frs.

Les auteurs passent en revue les indications des traitements chirurgicaux, des différentes fractures du maxillaire inférieur et des maxillaires supérieurs.

Ils insistent particulièrement sur le fait que le traitement chirurgical de ces lésions ne doit être envisagé que lorsque les possibilités des manoeuvres orthopédiques sont épuisées; manoeuvres que tous les spécialistes savent combien elles sont nombreuses et efficaces, surtout chez un sujet présentant des points d'ancrages dentaires différents.

Après avoir fait le départ des cas qui relèvent de la chirurgie, et de ceux pour lesquels, la thérapeutique sanglante est inutile et parfois même contre-indiquée, ils dé-

crivent avec minutie les différentes méthodes chirurgicales de réduction et de contention des fractures de la mandibule et des maxillaires supérieurs. Ils en donnent pour chacune les avantages, les inconvénients, et les indications particulières.

La grande expérience des auteurs leur a permis de mettre au point, aussi bien pour les Chirurgiens Spécialisés, que pour ceux qui ne pratiquent qu'exceptionnellement la chirurgie de la face, des questions en général peu connues.

Le Médecin Général BERCHER, le spécialiste le plus qualifié par ses études sur les affections des maxillaires en particulier, sur leurs lésions traumatiques fait ressortir le grand intérêt de l'ouvrage de Messieurs Ginestet et Merville.

Il doit avoir sa place dans la Bibliothèque de tous ceux qui s'intéressent à l'Odontostomatologie et à la Chirurgie de la face.

Le développement dentaire normal et ses troubles

(agénésies, dents surnuméraires, incluses, ectopiques)

par le professeur ROLAND BAY (Bâle)¹

On observe déjà chez les foetus, des variations individuelles dans le degré de développement de l'appareil dentaire; ces variations semblent conditionnées en partie par des facteurs héréditaires, en partie par l'influence du milieu (influence hormonale, nutritionnelle, etc.).

Les 7 premiers mois de la vie voient une croissance très active des maxillaires, qui doivent rattraper leur retard sur le crâne cérébral. Cette croissance est en relation intime avec le développement et surtout l'éruption dentaire; en particulier le lieu d'éruption de la première molaire de lait est décisif pour le développement ultérieur, parce qu'il délimite la place disponible pour les dents antérieures. Cependant une denture de lait trop serrée n'implique pas nécessairement que la denture permanente manquera de place, car un élargissement du maxillaire est encore possible au moment de la seconde éruption. Toutefois ces cas doivent être suivis attentivement, en particulier au moment du changement de dentition.

Normalement, les incisives permanentes se forment et font éruption *lingualement* par rapport aux incisives de lait. Si les dents de lait ne tombent pas à temps, il se constitue alors une double rangée de dents. Faute de place, les incisives peuvent faire leur éruption *en rotation*; il faut prévenir cet accident *par une expansion précoce*. Par contre, la correction d'une prémolaire en rotation est le plus souvent spontanée au moment de l'éruption.

Les tables ne rendent compte que de valeurs moyennes, et de larges écarts de développement sont possibles sans signification pathologique. On se contentera

souvent de suivre attentivement l'évolution de cas écarts pour pouvoir intervenir à temps, si cela devient nécessaire.

Dans la règle, une dent ne fait son éruption que lorsque la racine a atteint le tiers de la longueur totale; très exceptionnellement, la racine peut n'être pas encore constituée au moment de l'éruption, ce qui entraîne la chute de la dent. L'auteur déconseille la **germectomie**, sauf pour la dent de sagesse, car une correction spontanée au moment de l'éruption est toujours possible, et des germes dentaires peuvent migrer dans l'espace laissé libre.

Au maxillaire supérieur, la canine fait son éruption après les prémolaires; en cas d'endognathie ou de base apicale réduite, elle est sujette à glisser vestibulairement ou même à rester en rétention. A la mâchoire inférieure, par contre, la canine précède les prémolaires dans son éruption. P2 reste volontiers incluse et il faut alors lui faire de la place par extraction; cependant on fera préalablement des radios pour être orienté sur la croissance radiculaire des germes, et ce sont les degrés respectifs de cette croissance qui indiqueront la dent à extraire et le moment de l'extraction. Les radios "*bite-wings*" ne sont pas suffisantes; de nombreuses radiographies sont indispensables, et le devoir du praticien est d'insister pour obtenir qu'on l'autorise à en faire **en nombre suffisant**.

Actuellement, on évite d'extraire les dents de 6 ans et on préfère intervenir sur les prémolaires, en complétant au besoin le résultat par un traitement orthopédique sur le maxillaire. En effet, les rapports anatomiques sont plus étroits entre m1 et le sinus maxillaire qu'entre p1 et celui-ci; la présence d'un récessus sinusien dans la région apicale empêche

¹ Résumé d'une communication à l'Assemblée annuelle de la Société suisse d'odontologie, Burgenstock, 7-9 mai 1955.

la racine de se déplacer, et les dents voisines ne peuvent combler l'espace créée. Il est important de vérifier radiologiquement les rapports entre racine et sinus avant une extraction.

Les anomalies de forme des dents peuvent être des anomalies de réduction (dent conique), ou des anomalies prolifération (dent géante). Ce dernier cas se rencontre surtout sur les incisives centrales supérieures et dans la denture de lait (dents jumelées ou fusionnées); parfois la denture permanente qui lui succède reproduit l'anomalie ou est incomplète, ce qui devra être reconnu à temps par la radiographie. Il faut encore citer les "*dents en clou de girofle*", les anomalies radiculaires de nombre et de forme, la "*dens in dente*", les traumatismes du germe par intrusion de la dent de lait, les "*dents en faucille*" (maxillaire supérieur).

Les anomalies de nombre peuvent être des anomalies par excès ou par défaut; leur cause est très discutée, mais on invoque le plus souvent l'atavisme ou une insuffisante ectodermique. Les dents qui manquent le plus souvent sont les incisives latérales supérieures, les 2es prémolaires aux 2 maxillaires et les dents de sagesse. Il existe des associations fréquentes, comme l'aplasie de la 2e incisive supérieure et de la 2e prémolaire inférieure, celle des 4 incisives inférieures, celle des 2 canines supérieures; il importe donc de faire suffisamment de radios pour dépister tous les défauts. Une persistance de la 2e molaire de lait doit faire penser à une agénésie de la 2e prémolaire permanente. Les agénésies sont plus fréquentes dans la denture permanente que dans la denture de lait. L'existence de dents surnuméraires est plus rare et se voit surtout dans la région incisive supérieure ("*mesiodentes*"), plus exceptionnellement parmi les incisives inférieures; cette anomalie entraîne la formation de diasthèmes, des pressions, des torsions, des

rétentions. Souvent ces dents ne font pas leur éruption, quelquefois elles s'inversent et poussent dans la cavité nasale. En présence de toute irrégularité des dents antérieures, il faut rechercher par la radiographie l'existence d'une de ces dents surnuméraires, qui doivent être extraites dans tous les cas. Une anomalie de position dans le groupe antéro-supérieur peut d'ailleurs aussi être causée par une hypertrophie du frein labial, une ossification du raphé médian, un kyste du canal nasopalatin. Il existe aussi des dents surnuméraires normales; ce sont souvent des prémolaires, parfois des molaires ("*paramolaire de Bolk*" et "*de molaire*"), rarement des canines.

Les rétentions et les ectopies se voient lorsque les germes sont en position anormale ou manquent de place. Une forte différence de grandeur entre dents de lait et dents permanentes, un corps maxillaire trop petit ou dont la croissance s'est arrêtée, une inclinaison des molaires et des dents de sagesse peuvent en être responsables. La perte précoce de dents de lait cariées peut, en favorisant le déplacement des dents voisines, être un facteur de rétention; un tissu de granulation dense sous une dent gangrenée peut empêcher l'éruption d'un germe, argument supplémentaire en faveur de l'avulsion de dents profondément cariées. Pour la canine supérieure, trois causes supplémentaires de rétention existent: l'ordre d'éruption particulièrement défavorable dans les races européennes, où la canine n'apparaît qu'après les prémolaires; un rétrécissement de la région de la fosse canine lors d'un accouchement au forceps; enfin l'obstruction par du tissu osseux de l'interdentaire de la dent de remplacement, qui ne peut plus jouer son rôle de soupape lorsque se manifeste la turgescence liée au développement dentaire. Un phénomène analogue se produit lorsque l'interdentaire débouche dans l'alvéole d'une dent de lait; il peut entraîner la formation d'un kyste folliculaire, particulièrement pour les canines supérieures et les dents de sagesse inférieures.

Journal

OF THE CANADIAN DENTAL ASSOCIATION

An evaluation of dentifrices in the prevention of dental caries and gingivitis*

By GORDON NIKIFORUK and JOHN B. MACDONALD†

PART I. Oral hygiene, Ammonium and Urea Compounds and Penicillin

This review is concerned with problems of hygiene as they relate to the prevention of dental caries and gingivitis through the use of dentifrices.

The object of oral hygiene procedures is to assist in the maintenance of oral health by influencing either the oral tissues or their bacterial flora by mechanical cleansing or specific therapeutic effects of chemicals. Essentially these problems relate to ecology—the interrelations of organisms and their environment in a natural habitat.

Dentifrices are generally a mixture of an abrasive, a detergent, a flavoring agent and substances necessary to facili-

tate their preparation and use. Therapeutic dentifrices contain in addition to the above some chemical which is intended to reduce the incidence of dental caries or gingivitis.

In view of the fact that the use of a toothbrush is a common denominator in the application of all dentifrices an evaluation of the significance of mechanical cleansing resulting from its use is considered first.

ORAL HYGIENE AND DENTAL CARIES

No simple relationship exists between oral hygiene and caries. Various investigators have reported relative freedom from caries in populations in which oral hygiene was poor (Sampson, 1932;

*This review was prepared at the request of the Research Committee of the Canadian Dental Association.

†The authors wish to acknowledge gratefully the assistance of Dr. R. M. Grainger in the preparation of the sections on experimental design and statistical interpretation.

Kirkpatrick 1935; Ferguson, 1934; Shelling and Anderson, 1936), while others have reported active caries associated with poor hygiene (Mabalay, 1938; Clements and Kirkpatrick, 1938; Hoesler and Fain, 1935; Brucker, 1943). Ludwick and Fosdick (1950) considered the ammonium content of mouth washings to be a good index of the amount of debris but failed to correlate the recoverable ammonium with caries incidence. Nikiforuk (1955) found no correlation between salivary sediment and dental caries.

There is on the other hand evidence of a relationship between bacterial counts of surface deposits on teeth and the presence of dental caries. Kligler (1915) showed that counts, per milligram of surface deposits were 10 to 50 times higher on carious than on noncarious teeth. Harrison (1940) and Wakeman and Smith (1948) demonstrated that the numbers of organisms recoverable from ground rat teeth were many times higher from carious than from non-carious teeth. These findings do not appear to be reflected in total salivary counts. There are great technical difficulties in arriving at a satisfactory estimate of the total salivary bacterial count (e.g. Burnett and Scherp, 1951).

It has been clearly established, however, that certain acidogenic components of the flora, particularly lacto-bacilli are increased in numbers in the presence of caries (e.g. Kligler, 1915; Jay 1929; Rodriguez, 1931; Enright et al, 1932; Bunting, 1934; James and Parfitt, 1954) and that suitable estimates of these numbers can be obtained from saliva samples.

From the above it can be concluded that studies on the effect of toothbrushing on oral hygiene or on total salivary bacterial counts could not be expected to yield information on the effect of this procedure on dental caries. The relationship between toothbrushing and lacto-bacillus counts on the other hand should be useful, but little attention has been given to this problem. Kesel, O'Donnel and Wallace (1954) have recently dem-

onstrated a transitory rise in salivary count of lactobacilli immediately following toothbrushing with a neutral dentifrice and a return to the prebrushing level in about one hour. Using no dentifrices the rise was not as high but persisted for at least 140 minutes. Gerke and Spitzhart, 1951 (quoted by Kesel, et al, 1954) found a decrease in recoverable acidogenic organisms following brushing and rinsing with water. The results of these two studies suggest that toothbrushing dislodges measurable numbers of acidogenic organisms from the surfaces of the teeth.

Tests on hamsters of the effect of brushing on caries incidence have been reported by Zander and Bibby (1947), Lazansky (1947) and Chernauek and Mitchell (1951). All three groups of workers demonstrated significantly less caries in the test than in control groups which were not subjected to the brushing.

Some direct evidence of significant reductions in the increments of caries in humans resulting from toothbrushing immediately after meals has been reported.

Fosdick (1950) reported a two-year study involving 946 young adults in which 523 were instructed to brush with a neutral paste (or otherwise rinse with water) within 10 minutes of the ingestion of "food or sweets." The control group were instructed to continue with their customary procedure—generally brushing on arising and retiring. A decrease in caries increment was recorded amounting to 41 and 60 per cent by clinical and radiographical examinations respectively. Lactobacillus counts were made each six months but the results were not published. A similar study by Kerr and Kesel (1951) involving 1716 children aged 10 and 11 reported a caries reduction of only 9.3 per cent from the supervised use in schools of a non-medicated tooth powder. The teeth were brushed at 9.00 a.m. and 1.00 p.m. and the children were urged to brush immediately after the evening meal. The

fact that a longer average period elapsed between eating and brushing than in the case of study by Fosdick may have had bearing on the variation in results of the two studies.

These two reports illustrate the difficulty of obtaining reliable data using human subjects in large scale studies. As noted by Kerr and Kesel (1951) such studies are hampered by "both psychological and physical factors"—initial imbalance of experimental and control groups, difficulty in obtaining and assessing the degree of cooperation, complete lack of control at times (e.g. summer vacations), influence of public health teaching, unconscious change in performance, etc. The importance of some of these factors and methods of eliminating error as a result of them are discussed by Arnold, Dean and Singleton (1944).

In summary there is no evidence that dental caries is related to the amount of "debris" adhering to the teeth. The composition of the debris appears to be more significant. Good evidence exists of a correlation between caries and numbers of lactobacilli recoverable from the oral cavity but there is inadequate evidence that the numbers can be significantly reduced by brushing. Hamster caries can be reduced by toothbrushing irrespective of the time relationship of brushing and eating. Evidence exists of a significant reduction in incidence of human caries as a result of brushing immediately after eating. Because of the inherent difficulties of caries experiments using human subjects, it is not possible on the basis of published data to state the extent of such protection.

TOOTHBRUSHING AND GINGIVITIS

There is good evidence that all forms of periodontal disease are associated with increase in the numbers of organisms in the oral cavity. The older literature, reviewed by Boe (1941) and MacDonald (1953) associates proliferative disturbances in the oral flora primarily with Vincent's infection. The observation in large numbers of only spirochetes and

fusiforms in the latter disease probably depended to some extent on the distinctive morphology of these organisms. In more recent studies Hemmens and Harrison (1942) reported a greater incidence of spirochetes, fusiforms and *Bacteroides melanogenicum* in 46 cases of chronic periodontitis than in 27 normal cases. Rosebury, et al (1950) using darkfield examination, culture techniques and animal inoculations noted striking increases in the total anaerobic flora in all forms of periodontal disease, including gingivitis. These findings were confirmed for non-specific gingivitis by Schultz-Hauadt and Bibby (1954) using smears only. In contrasting the normal flora and the flora or periodontal diseases, Rosebury, et al (1950) observed that "in the absence of data showing differences in presence, kind or virulence of organisms under normal as contrasted with pathogenic conditions, the most economical hypothesis would seem to ascribe the difference to numbers only."

Brucker (1943) presented epidemiological evidence of a direct relationship between oral hygiene and marginal gingivitis in a group of 1634 children. A similar relationship has been reported by Brown et al (1954) for approximately 5000 children.

While the literature is replete with testimonials to the value of toothbrushing in control of gingivitis and periodontitis (Goldman, 1949; Coolidge and Hine, 1951; Miller, 1950; Merritt, 1945; Hirschfeld, 1939; Michigan Workshop, 1952) a limited amount of experimental data exists to support this clinical observation. Beube (1948) reported that patients instructed to brush the teeth on one side of their mouth according to a prescribed technique had a resolution of marginal gingivitis on this side; on the opposite side brushed according to the patients' usual method the gingivitis persisted. Both sides were scaled daily. Hine (1950) instructed a group of dental students to brush only one side of their mouths for a period of two weeks. In most cases no observable difference be-

tween the two sides was noted at the end of the two-week period. In a few, gingivitis occurred on the unbrushed side together with accumulations of *materia alba*. This type of result was illustrated with convincing photographs. McDonnell and Domalakes (1952) demonstrated that brushing the teeth (using a neutral dentifrice) resulted in a measurable decrease in gingivitis in two months, in a group of 215 boys age 10 to 18 years. The reduction was more marked in 9 months, amounting to 67.6 per cent as recorded by the P.M.A. index (Massler, et al, 1950). A similar result was recorded by Shklair et al (1953).

At least three mechanisms have been suggested to account for the beneficial effect of toothbrushing on periodontitis and gingivitis: (1) stimulation of peripheral circulation (Bricker, 1936; Miller, 1950) (2) increased keratinization (Robinson and Kitchin, 1948; Stahl, et al, 1953) (3) removal of irritants including bacteria (Brown, et al, 1954; Coolidge and Hine, 1951). It is not possible to assess the relative importance of each of these mechanisms but the evidence suggests that the cleansing effect is significant.

AMMONIUM AND UREA COMPOUNDS

Urea and ammonia are normal constituents of resting saliva. Urea is a true salivary gland secretion or diffuses passively from the blood stream through cellular membranes into the saliva. Ammonia is not found in saliva obtained by a cannula and is believed to be derived largely from breakdown of urea (Updegraff and Lewis, 1924) and amino acids (Kesel et al, 1947) by urease and deaminases of the oral bacteria.

A report by Grove and Grove (1935) indicated that the ammonia nitrogen content of the saliva from caries immune persons was higher than that from a caries susceptible group. Neither the age of the persons in the two groups nor the degree of caries susceptibility were noted. The data on the analytical method did not contain sufficiently detailed information for exact duplication by other

workers. A later report by White and Bunting (1935) failed to confirm the above findings.

Further interest in the hypothesis that ammonia nitrogen in the oral cavity might be associated with dental caries was stimulated by reports that quinine-urea solutions stopped the *in vitro* formation of acids in a 1 per cent glucose-saliva mixture (Wach et al 1942) and by the studies of Stephen (1943), Muntz and Miller (1943), and Stephan and Miller (1944) on the effect of urea in preventing a drop in pH of dental plaques after a glucose rinse.

The use of urea and ammonium compounds in dentifrices arose as a result of work by Kesel et al (1946). These workers reported that saliva cultures collected from caries free persons developed during an 8-day incubation period the ability to inhibit the growth of oral lactobacilli. The inhibiting agent in the filtrates was thought to be ammonia. "In vitro experiments indicated that a combination of 5 per cent dibasic ammonium phosphate and 3 per cent urea was the most effective antibacterial and antacid agent". The publication of this report resulted in the incorporation of urea-ammonium mixtures into many commercial dentifrices. Laboratory and clinical studies were initiated in several research centres to confirm and extend the above reports.

Kesel et al (1946, 1947, 1949) reported significant inhibition of acid production by lactobacilli with the addition to saliva of 2.5 per cent dibasic ammonium phosphate and 1.5 per cent urea (final concentrations). Kirchheimer and Douglas (1950) reported that ammonium salts added to culture media in concentrations of 0.25 to 0.5 per cent produced no inhibition of the strains of lactobacillus tested. Pearlman (1949) studied the influence of urea and ammonia on growth of lactobacilli. He noted that relatively high concentration (0.38 M) of ammonium and potassium phosphate showed no difference in their inhibitory effect. Growth was inhibited for 24 hours in the

presence of 6 per cent urea, and glycolytic activity was almost completely inhibited at 4 M concentration. The growth inhibiting effects of combinations of urea and ammonium phosphate in broth were not significantly greater than the effects of each substance alone.

Jenkins and Wright (1951) reported that a final concentration of 1.2 per cent dibasic ammonium phosphate was strongly inhibitory to acid production by saliva but that ammonium phosphate was replaceable by sodium phosphate without loss in activity. Wright and Jenkins (1953) found a significant correlation between acid produced on incubation of saliva—glucose mixtures and the ammonia concentration (a) initial and (b) after incubation.

Ludwick and Fosdick (1950) determined the ammonia content in the dental plaques of 1,000 subjects and failed to reveal any correlation with caries activity. The ammonia concentration of the saliva was found to be approximately 0.20 mg. per cent and in no case did it reach 50 mg. per cent, the supposed minimum value effective in inhibiting growth.

Laboratory studies generally do not confirm the hypothesis that ammonia or urea in the saliva is related to caries activity. Where inhibition of bacterial glycolysis or growth of organisms by ammonium or urea compounds has been reported the effective concentrations are beyond the range generally found in the saliva or dental plaque.

Kerr and Kesel (1951) reported on a two year clinical study involving the use of a dentifrice containing 2 per cent dibasic ammonium phosphate and 5 per cent urea. 716 grade school children, 10–11 years old, were divided into three groups. The first group brushed their teeth with dibasic ammonium phosphate and urea dentifrice under supervision; the second, also supervised, brushed with a non-ammonium dentifrice and the third group brushed with a dentifrice of their choice without supervision. The results of the study, in terms of caries increments, may be summarized as fol-

lows: there was no significant difference between a group using any dentifrice at home and the group using a non-ammoniated dentifrice under supervision in school; the group using a non-ammoniated dentifrice and the group using the ammoniated dentifrice, under similar conditions showed no difference; a significant difference was obtained when the group using any dentifrice under no supervision was compared with the group using an ammoniated dentifrice under controlled conditions of brushing, the latter group having smaller caries increments by about 9 per cent.

Davies and King (1951) conducted an experiment to test the effectiveness of an "ammoniated" dentifrice containing 5 per cent urea and 2 per cent dibasic ammonium phosphate on a group of children (age 12 to 18 years) and young adults (age 19 to 31 years) wherein the brushing of teeth was not supervised. Of the 401 original participants 339 remained cooperative throughout the study period. There was no difference between the experimental and control group after a period of nine months. There appeared to be a significant change in lactobacillus counts after the experimental powder was used for one month, but at the end of the study period the difference in the counts between the two groups was no longer significant.

Dirks et al (1953) studied the effect of an "ammoniated" dentifrice on the caries incidence in 166 school boys age 10 to 14 years. The experimental group brushed their teeth with a dentifrice containing 5 per cent urea and 3 per cent dibasic ammonium phosphate under the supervision of the teaching personnel. After one and one-half years there was no significant difference in the caries or the lactobacillus count between this group and the control.

The effect of daily brushing of hamsters' teeth with ammoniated and non-ammoniated dentifrices and of the ingestion of these compounds was studied by Chernauek and Mitchell, (1950 and 1951). The ingestion of 1.0 per cent di-

basic ammonium phosphate and 0.6 per cent urea incorporated into the caries-producing diet resulted in a significant reduction of the caries score. There was no difference in the magnitude of the reduction of caries due to daily brushing of molar teeth of hamsters with a control or with an ammoniated dentifrice.

The clinical effectiveness of a dentifrice containing a 22.5 per cent area and 5 per cent dibasic ammonium phosphate was investigated by Henschel and Lieber (1949). A test group of 100 cases used cosmetic dentifrices an average of 7.8 years, with an average DMF per year of 2.39. After using the therapeutic dentifrice for a period of 34.3 months the average DMF per year was 1.55. Available data do not permit analysis of the yearly DMF increments in terms of increase or decrease with age. A control group of 50 used a cosmetic dentifrice throughout the observation period of 13 years with an average DMF of 2.48. A reduction in the caries incidence of 37.5 per cent was claimed for the test group over the control group. This study was conducted by examination of records of private patients. Details of the method of examination of each patient were not sufficiently recorded. The importance of oral hygiene in influencing the results was noted by the authors in the statement "some proportion of the apparent caries-incidence reduction may be attributed to enthusiastic oral hygiene heightened by the knowledge of the possible therapeutic benefit of the dentifrice". This study emphasizes the inherent difficulties of conducting an investigation such as the above in a private office.

Lefkowitz and Vente (1951) published an interim report of a three-year project on the effect of an "ammoniated" dentifrice with a urea content of 22.5 per cent. The study was conducted on 217 children ranging from 5 to 19 years of age. This number was reduced to 120 children after one and one-half years. The difference in caries incidence between the two groups at the end of one year

was not significant. In the third six-month period the caries incidence of previously non-carious permanent teeth was 60 per cent less than in the control group.

Gale (1951) studied the effect of an "ammoniated" dentifrice, during a two year period on children under 3 years of age. The teeth were brushed under supervision after arrival in school and after lunch. Thirty children from six schools formed the experimental group, with another group of thirty children forming the control. After two years the test groups showed a 48 per cent increase in the total number of cavities. The control group had a 137 per cent increase in total number of cavities during the same period. However, the number of cavities in the test and control groups prior to the experiment was 60 and 35 respectively. At the end of the experiment the test group had 89 cavities and the control 83. No conclusion is justified in view of the dissimilarity of the groups.

A dentifrice containing 12 per cent urea and one per cent urease was evaluated in a study by Hawes and Bibby (1953). The urease was added to provide the necessary enzyme for the release of ammonium ions through the decomposition of urea to ammonium carbonate. The clinical trial of the dentifrice under supervised brushing was carried over a period of one year among 372 school children between the ages of 7 and 13 years. This study was supplemented with an eight-week bacteriological study in young women. Brushing twice daily with the urea dentifrice failed to produce any reduction in the occurrence of new caries in 196 children as compared with that in 177 children using a control dentifrice. The difference in the lactobacillus counts between the two adult groups was not significant.

Cohen & Donzanti (1954) reported on the effectiveness of supervised use of a dentifrice containing 13 per cent urea and 3 per cent di-basic ammonium phosphate. The experimental group consisting of 169 persons age 9-13 years had 1.70 new lesions over a two year period. The

control group consisted of 137 persons, in the same age group had 2.27 new lesions. The reduction of 25.2 per cent is statistically significant.

The hypothesis that the salivary ammonia-urea levels are associated with caries immunity is based on tenuous evidence. The original report of Grove and Grove (1935) that the factor of immunity to dental caries is probably ammonia and the report that ammonium ions specifically inhibit *Lactobacillus acidophilus* (Kesel et al, 1946) have not been confirmed by recent experiments.

Clinical evidence suggests that dentifrices containing dibasic ammonium phosphate (2 per cent) and urea (5 per cent) have no therapeutic value in the prevention of dental caries.

The studies involving dentifrices containing higher concentrations of urea (13-22.5 per cent) and dibasic ammonium phosphate (3.5 per cent) are not conclusive. Due to the inadequate experimental design of some of these studies, and the preliminary nature of the more recent reports the clinical effectiveness of dentifrices containing high concentrations of urea remains unanswered.

PENICILLIN

Many reports in the literature have shown that administration of penicillin inhibits the growth of a fraction of the normal oral flora, particularly the predominant gram-positive species, and permits a concurrent overgrowth of gram-negative organisms (e.g. Long, 1947; Lipman, et al, 1948; Smith and Bloomfield, 1948, Haffner, et al, 1950; McCurdy and Neter, 1952; Smith, et al 1952). It has also been demonstrated that addition of penicillin in the diet of rats resulted in marked reduction of *Lactobacillus* counts. (McClure and Hewitt, 1946; Stephen, et al, 1952). The effect of topical penicillin on human *Lactobacillus* counts is not clear. Some investigators have found reductions (White, et al, 1949, Hill and Kniesner 1949, Fosdick et al, 1951, Carter, et al, 1953) while others have failed

to do so (Fitzgerald, et al 1950, Ludwick, et al 1953, Hill 1953).

Brudevold and Hawes (1952) showed that use of a penicillin-containing dentifrice resulted in lowered acid production when saliva was incubated with sucrose for 3 hours. According to Brudevold and Hawes (1952) acid production by plaques was not reduced in individuals using a penicillin dentifrice. However, comparison was made between 24 students using the penicillin dentifrice and 21 using a control dentifrice. Comparison of the two dentifrices within the same group might have yielded different results. Fosdick, (1953) showed that acid production by plaques was reduced by the use of penicillin-containing tooth powder and showed also that penicillin was retained on the plaque for 12 to 24 hours.

McClure and Hewitt (1946) demonstrated complete protection against caries in 82 rats by feeding penicillin in the food (75 units per gm.) and drinking water (75 units per ml.) while 41 of 82 control animals developed caries. This finding was confirmed by Stephan et al (1952). Webman, Hill and Kniesner (1949) showed that as little as 5 units of penicillin per ml. of water gave about 50 per cent protection against caries to rats fed on a course corn diet. Reduction in caries activity in hamsters by the use of penicillin was reported by Zander and Bibby (1947).

There is thus substantial agreement in laboratory and animal experiments that acidogenic flora, acid production and experimental caries can be reduced by a penicillin dentifrice. In addition there is evidence that penicillin becomes attached to the dental plaque for several hours and might be expected to provide prolonged protection against acid production on tooth surfaces.

No such unanimity of results has been reported in four clinical trials of penicillin dentifrices on humans. In only one of the four studies has there been a significant reduction in caries. Zander (1950) supervised 216 children for 1 year and 202 children for 2 years in the use

of tooth powder containing 500 units of potassium penicillin G per gram. Groups of 102 children for 1 year and 150 for 2 years were supervised in the use of a control tooth powder. The children were matched in respect to age, numbers of non-carious teeth, economic and social status. By clinical and radiographic examination a reduction amounting to 54 per cent for each year was reported for the experimental group.

Hill and Kniesner (1949) conducted a study in which institutionalized children were provided with a tooth powder containing 1000 units of penicillin per gram but in which no supervision was exercised over toothbrushing procedures. No reduction in caries was demonstrated at the end of one year. Similarly Walsh and Smart (1951) studying a small group of children (55) provided with a powder containing 100 units of penicillin per gram did not show a reduction in caries. In 1953 Hill attempted to duplicate Zander's results by conducting a regimented study on 492 children age 7-12 years. A small reduction in caries (about 15 per cent) was shown at the end of one year. The paste used contained 1000 units of procaine penicillin per gram. The author suggested (without evidence) that the difference between his and Zander's results might be related to differences in the ability of the procaine and potassium salts to penetrate the dental plaque.

The results of Zander's study suggest that under conditions of adequate supervision a dentifrice containing 500 units per gram of potassium penicillin can significantly reduce the incidence of caries. Other studies suggest that unsupervised use of a penicillin dentifrice is not effective as a caries preventive agent.

There are additional significant problems relative to the use of penicillin in a dentifrice. Development of a flora with increased resistance to penicillin has been reported due to the use of a penicillin dentifrice (Welch, et al, 1952; Hill et al, 1953). The effect has not been striking

and it has been shown only for indigenous organisms. It would appear unlikely that the levels of resistance developed would hamper therapy in the event of disease resulting from these organisms. Clinically significant increases in resistance to penicillin among organisms commonly treated by penicillin have been virtually non-existent except in the case of staphylococci (Eagle, 1954). In the latter instance resistance of many strains now being isolated is already so great (Eagle, 1954) that the use of small amounts of penicillin in a dentifrice could not be expected to significantly affect the problem.

Disturbances in the balance of the flora from use of several antibiotics including penicillin have been followed in some instances by the development of monilial infection (Harris, 1950; Woods, et al, 1951; Gausewitz, et al, 1951; Bartels, 1953; Seligmann, 1952). No such reports have followed the use of a penicillin dentifrice. In view of the fact that *Candida Albicans* occurs normally in the oral cavity of many individuals (about 25 per cent according to Lilienthal, 1950) examination should be made for changes in its occurrence and relative numbers in groups using a penicillin dentifrice. Increases have been shown following the use of aureomycin and choromycetin (McGovern et al, 1953).

No significant toxic reactions have been reported from the use of a penicillin-containing dentifrice. Use of much larger quantities of penicillin administered orally have been relatively free from side-effects. Administration of doses of 100,000 to 400,000 units per day for periods of up to 11 months in 2937 individuals resulted in mild cutaneous and digestive reactions with a frequency of about 0.7 per cent greater than in a control group (Kuh and Collen, 1949). Of 148 children receiving 50,000 units twice a day mild toxicity occurred in only 3 (Lapin, 1948). Black hairy tongue has been reported a number of times from the use of oral penicillin (e.g. Bedford,

1946; Bartels, 1954) but its occurrence does not seem to be important.

No hypersensitivity accompanying therapeutic dosage of penicillin for medical purposes has been attributed to the use of a penicillin-containing dentifrice (Zander, 1950, Hill, 1953). Mass prophylaxis studies using large oral doses of penicillin have been singularly free from such effects (Kuh and Collen, 1949; Lapin, 1948; Eagle et al, 1949) in spite of the fact that anaphylactic reactions to penicillin sometimes with fatal results are occurring with increasing frequency

(Welch et al 1953). Sensitization from the use of penicillin in a dentifrice is theoretically possible and in view of the increasing occurrence of acute anaphylactic reactions the possibility deserves further investigation.

In view of the lack of agreement on the caries-preventive value of penicillin and the need for further study in respect to the possibilities of hypersensitization or harmful disturbances in the normal flora, the general use of a penicillin dentifrice is not justified.

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Dental psychology*

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In the field of psycho-somatic medicine, organ language is often used in an attempt to illustrate a point. In this paper we will begin by following this example, since the expression "teeth" is used by all of us in ordinary conversation to express such things as aggression, determination, etc. We are all familiar, for example, with such expressions or phrases as, "sinking your teeth into a job", "gritting your teeth", "cleaning your teeth", "showing your teeth", and at times the expression "knock your teeth out" is used as if this was both a satisfying experience on the part of the person about to perform the action, and on the other hand, the height of humility on the part of the recipient.

Besides being used in above phrases and expressions, nowadays however, teeth seem to be symbolic of beauty, and our various tooth paste ads proclaiming the advantages of their various products, would have one believe that if one does not use a specific product, (and consequently has "poor teeth") one will never get married, or if one does, one will never have a gorgeous wife or handsome husband, a \$25,000 home, a Cadillac or two, depending on whether one has one or two garages. Needless to add one will not have three or four beautiful, intelligent children unless a specific product is used, and probably what is more important if we do use this product we will most likely get along well with our mother-in-law.

* Delivered to the Maritime Dental Convention.

Originally however, I would assume that teeth were used not only to beguile a member of the opposite sex into swooning, but also for such primitive pastimes as eating, and also in defence of ourselves. This latter method of assuring self-preservation has been eliminated in most athletic pastimes, but I feel sure that in unscheduled fights, the part of biting, gnawing, and chewing still maintains a high place if the chewer, gnawer or biter still retains a mouthful of teeth after the preliminary exchange of blows has terminated.

It would appear then that the loss of teeth is a threat both to our ability to defend ourselves, a threat to our self-esteem, and probably in a more controversial frame of reference (psycho-analytical) the loss of teeth may, and I emphasize *may* bring out in the person hidden castration anxiety. Although this latter may seem farfetched, there are many phenomena in which oral eroticism is still retained in the adult, for example, kissing, smoking, drinking, many eating habits and also many perverse practices. One can even stretch a point further and say that many of us also have fantasies for the incorporation of objects into ourselves, and we might say that these early cannibalistic fantasies are still retained amongst our small fry by their love of "animal crackers".

However, it is not my desire in this paper to get into a controversy regarding the unconscious symbolic nature of teeth, but rather to try to leave you with some practical points, so that you practitioners can, if I may use the term, "incorporate" them into your personalities and file them away for future use.

Despite the fact that practically all lay magazines, the press, radio, T.V., the movies, etc., have had a field day with psychiatric material, and despite the fact that the psychiatrist is rapidly replacing the mother-in-law and the travelling salesman as the butt end of jokes, the dentist still behaves as if he never heard of psychiatry. Plato once said "For this

is the great error of our day that physicians separate the soul from the body". In this twentieth century dentistry still adheres to that saying, and it remains the branch of medicine most separated from the psyche, so that the word dental becomes associated with the idea of "mechanical", for example associated with extractions, dentures, appliances, and such devices. Yet we cannot divorce teeth from the patient, since all teeth are attached to people, unless they come to you through the mail.

We are all extremely aware of the old cliché that simply thinking about going to the dentist stops a tooth ache. This is a clear cut indication that psycho-somatic influences enter into dental practice.

If we may return again to some of the theories postulated above, we may add not only does the loss of teeth symbolize in some the loss of strength and the loss of virility but also the old adage "the loss of a tooth means the loss of a friend". Again, not only does the idea of losing one's teeth mean a possible alteration in the appearance of the individual but the wearing of dentures and the losing of teeth is a sign of old age (not only in horses but also in individuals, whether they be male or female). Unhealthy and erroneous attitudes developed in childhood towards dentistry are very often at the root (if I may use the word) of poor oral hygiene. Many dentists know that poor oral hygiene is not limited to people in the lower income brackets but occurs in all income brackets for the reason that very often the patient is afraid to go to the dentist, is afraid of being hurt, with all its implications. Our many cartoons expressing this phase of dentistry certainly do not help the situation any. One book that I read recently showed a cartoon which I am sure you are all familiar with, and it defined suppression, as "conscious refusal to admit unpleasant things even exist". This cartoon showed a smiling individual stepping out of the dentist's chair, both arms of the chair severed and still clutched firmly in the

patient's hands while he says, "Naw, didn't bother me at all".

If dentistry is to get back into the fold of medicine and if the dentist is to be considered by the populace as little more than a mechanic, despite his many great gifts both technical and surgical, he must be able to relate himself not only to his clientele but also to the general public as a man who is treating not teeth but people who need dental care.

It is obvious then that the public must be educated, and that this education must be started at an early age, if the dentist is to be accepted in his proper perspective. When then should this education begin? Most authorities seem to agree that parents and dentists should co-operate in persuading children to regard dental treatment as something which is rational; something that is necessary; something that can be had with a minimum of discomfort; something that is for our benefit rather than to look upon a visit to the dentist (or for that matter a visit to the doctor for a needle) as an ordeal or as a form of punishment. "If you do not keep quiet I will give you a needle or I will bring you to the dentist" is hardly an intelligent manner for parents to enforce discipline. Then again, too many adults exaggerate how painful a visit to the dentist can be, so that children may come to fear the dental office as a modern torture chamber where bad little boys go if they as much as dare to disobey "mummie" or "daddy", or break a window, or what is much more common land a haymaker on the neighbour's child. If we are guilty of some or all of the practices mentioned above, how can we withdraw the above sentiments and picture the dentist as a kindly St. Nicholas when it is time to have dental work done to the child? It is obvious that the problem must be realistically approached and the situation truthfully pictured.

When then should the child begin to visit his dentist? The general consensus is that around the age of three whether it is needed or not the child should

visit the dentist. Maybe on these visits he will be accompanied by the mother or a sibling so that the youngster can watch his mother or brother or sister sitting in the dentist's chair receiving treatment as a matter-of-fact operation. He can then come to look upon this as something that must be done, something that is beneficial, something that is for his own welfare. Needless to say, the mother who faints or goes into a hysterical fit of screaming is hardly a model that one wishes the youngster to emulate. It is also obvious that it is desirable for the child to visit the dentist before painful procedures have to be carried out. We might call these visits "get-acquainted periods". These visits then, depending on the personality of all parties involved, can be fun rather than torture, and when I say torture I do not mean necessarily on the part of the patient but also on the part of the dentist. I am sure nothing can be more conducive to poor business than to have your waiting room shuddering in fear and terror when some leather-lunged little darling raises his voice in anguished screams while he lets go with a few choice phrases which should not be used in the office of any self-respecting dentist (although they may be reserved for the relief of tension when one innocently jabs one's finger with a needle). Incidentally I'm sure that most of these little darlings, the mother will readily reassure you, never as much as raise a whisper at home, and she is usually at a loss to explain where he learned those awful words.

Unquestionably one has to be a realist, there are some dentists who can handle some children better than some mothers, because it is fair to assume that dentists are parents themselves. On the other hand there are some mothers or fathers who can handle that particular child better than the dentist. I should imagine that nothing can be more disconcerting than to have a mother hovering over the dentist chair much like an eagle, while it is uncertain whether she will light on

the child or the dentist or both. It is equally bad to have a mother constantly inquiring if her child is being hurt. Very often if both parent and child assume that the child will behave like an adult the child will do so. If on the other hand one expects the child to be afraid and transfers that feeling to the child, being a very sensitive transmitting and receiving apparatus, he will pick up these transmissions and very often will not only be afraid but will refuse also to co-operate. Obviously if the child is in such a state of mind and refuses to co-operate, it is not wise to use force, unless some real emergency exists. The combination of force and pain will cause him to dread the next occasion all the more, and it could very well be the means of establishing an attitude which in later life means dental neglect.

But I am sure that the dentist not only meets the child, or the person who fears having his teeth extracted, but also the opposite number the one who is all too amenable to the idea of losing teeth. This type of person is not only "addicted" to this pastime but also to all types of surgery, and I am sure that carloads of teeth, acres of sinus, tons of tonsils, shiploads of appendices, truck loads of haemorrhoids, etc., have been removed from our neurotic friends. They seem to get a certain satisfaction from the removal of appendages and secondary gratification from physical discomfort and the attention that is diverted their way. Much too often these people having heard or read somewhere that the removal of foci of infection is the cure for all physical disorders, become their own diagnosticians and conclude that the removal of teeth will cure their many ills. Consequently they spare no expense, trouble, nor time to get this procedure done so that finally the dentist might say "Well, if I don't do it somebody else will". The idea that "it will do no harm" is illogical because the assumption is based on a physical point of view, forgetting all the while that these appendages have people attached to them.

Weiss and English discussed the unconscious motivations present in the sacrifice of organs as a desire to help get rid of essential guilt. This sense of guilt usually dates back to childhood and resides in the unconscious mental life of the person, so that such people do not realize that they are trying to overcome guilt when they suffer the pain, and they make the sacrifice of having something removed be it from the mouth, the abdomen, or the pelvis. In discussing this particular theory they gave the following example.

A 44 year old man studied by them had complained of having pain in the left chest which he suspected was due to heart disease. Having been seen by a Cardiologist he was told that he did not have heart disease. He received little support from this when on a later visit to the family physician he saw a report stating that this man should be watched because of a family history of heart disease. When his family doctor told him his trouble was all in his head and that he should see a psychiatrist he was very much annoyed. This pain, which had been of eight years' duration, had come on during the time of a business crises at which time he had been working very hard, eating irregularly, smoking a lot, etc., and there was also a background of long-standing difficulty with his wife who was not very sympathetic towards him and had advised him to stay away from doctors.

Four years after the beginning of his pain, he had six teeth extracted. He felt nervous for a long time afterwards and became very angry that the teeth had been removed and at the necessity for wearing a bridge. He regarded his denture as a foreign body and, moreover, it served to remind him of the fact that his father died of heart trouble not long after he had been urged by the patient to have some dental extractions. He was allowed to talk over this situation on more than one occasion until his guilt was mitigated. He finally got insight into his situation, was satisfied there was

an absence of organic disease. He realized the relationship between his life situation and his symptoms, particularly his identification with his father and his hostility with the dentist, and finally he could adopt his prosthesis as part of himself.

Up to this point, the examples noted have been those of neurotic patients. However, I should imagine that very often the dentist is called on by a person suffering from a severe mental illness, and that he can easily become involved in this type of person's delusional thinking. I am referring of course to a schizophrenic type of illness or as the older text books referred to it, dementia praecox. I need not of course go into the types of schizophrenia, suffice to say that in the type known as paranoid, delusional material is to the forefront. This type of person appears outwardly as a normal individual, and many of them take their places in society and are intelligent enough to cover up their illness. However, sooner or later their delusional system becomes systematized and they feel some organization is against them — radio, radar, and of course now T.V. influence them. They may, however, have special delusions which are fixed on some organ of the body. My first experience with a paranoid patient was when a patient with a very abundant crop of hair, told me that ever since he started losing his hair people kept staring at him and knew that he was different from other people. On the basis of this statement and others laden with delusional material a local psychiatrist diagnosed this as a case of schizophrenia and he was committed to a mental hospital.

Similarly the dentist may have a patient come to him complaining of a foul smell in his mouth, or that his teeth are shaped peculiarly, or that they are abscessed and that poisons are going through his blood. Such a person must be evaluated properly. If he blames his lack of promotion on the fact that his teeth are crooked, or his inability to get a girl friend because he has abscessed

teeth, or he feels that people can tell by looking at him or people are laughing at him because of the above mentioned reasons even without psychiatric knowledge one is justified in suspecting that something is wrong, not so much with this person's dental apparatus but with his mental apparatus. Countless x-rays of the teeth will not reveal a thinking disorder.

At this time may I raise a word of caution to those enterprising individuals who would like to or who are practising hypnotism. Urged on by the advancement of modern psychiatry and cautioned to some extent by the deaths which occasionally occur to patients under anesthesia, these individuals try hypnosis as an adjunct to their dental armamentarium. I have certainly no objections to anybody using hypnosis and am only too pleased that my dental friends should be that interested in psychiatric techniques that they should even read a book on the subject although it might be quite specific. But a word of caution is directed towards picking suitable subjects for this type of therapy. The type of person most amenable to hypnosis is usually the person who is very suggestible and very often we find this trait in the hysterical person. The hysterical person usually lives quite a life of fantasy and I would caution anybody who is using hypnosis to make sure a nurse or suitable witness is always present in the room when a female patient is under hypnosis, less the dentist finds himself involved in a court action for sexual advances.

I think by now it is obvious that the dentist must and should know something about his patient. A few minutes spent on a history and a correct diagnosis made is obviously more satisfactory than merely "open your mouth—that will be \$2". I am obviously being facetious but the dentist must be interested in more than just the person's teeth if he is to merit the name, doctor, and take his proper place in the field of medicine.

In closing then, I hope that I have

made you realize that the mouth is more than a cavity filled with cavities. "The mouth quite aside from its utilitarian attributes, is psychologically speaking directly or symbolically related to the major human instincts and passions, for example, to self-preservation, to cognition, to love and sexual mating, to hate and the desire to injure or kill. Since the mouth represents the organ for the expression of certain instinctual cravings it is charged with a high psychological potential. Therefore, when operations are performed on this area, reactions occur which may seem irrational and bizarre to those who look upon the mouth simply as an organ for taking in food. Remember that the human infant puts everything in its mouth. In other words, it tests out its environment in this fashion, and the sucking impulse which appears at birth and continues on past weaning, is an important method of deriving emotional satisfaction. In addition to chewing, there survives in man a tearing and biting impulse. Darwin pointed out that in states of rage teeth

are not only clenched and ground together, but the corners of the upper lip are drawn back and the teeth bared, which he thought remarkable considering how seldom they are used by men in fighting. This attribute of the human mouth is now transferred to its verbal offerings. We speak of "sharp words", "biting wit" or "mordant humour". Other functions gustatory and olfactory properly belong to the mouth may be conferred on our utterances, which are described as bitter, sweet, and even foul. Nor should the mouth as an organ of love be forgotten. A doting mother cooing over an infant says "I could just eat you all up".

Once again, may I remind you that the buccal cavity has wended its way into our language and also to the obvious psychiatric implications of this orifice. May I leave you now to digest these morsels. Hoping that I have not bitten off more than I can chew.

Ref: Weiss & English "Psychosomatic Medicine".
 Fenichel "Psychoanalytical Theory of Neurosis".

An experiment on the *Macacus rhesus* monkey demonstrated that there is no difference between orthodontically moved vital and devitalized teeth in their gross and histologic aspects, provided that the orthodontic forces are carefully regulated and that the root canals have been sterilized, endodontically treated, and the periodontal membrane kept intact.

No indication of a foreign body reaction was found at the apices of any of the devitalized teeth.

In the absence of a similar experiment on human beings, one may assume that the experiment on this very closely associated animal may be compared with similar movement of vital and devitalized teeth in the human being, and that both vital and devitalized teeth of human beings and monkeys respond in the same manner to orthodontic treatment. Clinical observations seem to confirm this assumption.

American Journal of Orthodontics,
 August 1955.

Newer knowledge of salivary gland physiology*

by J. F. VOLKER†

The local actions of saliva in digesting starch, inhibiting bacterial growth, mechanically cleansing oral tissues; and accelerating blood coagulation have been the subject of a considerable number of investigations and are well known to most dental practitioners. They have been rather adequately summarized in a review by Bibby.¹ In contrast, the researches that are indicative of a relationship between the salivary glands and other body tissues for the most part have not been incorporated into the dental literature. Since the number of pertinent observations in this respect has reached sizeable proportions, it is the purpose of this paper to review them briefly.

In 1942, noting the increasing use of the desalivated albino rat for experimental caries studies, Ginn and Volker² investigated the effect of salivary gland extirpation on the general development of the rat. They reported that rats having their salivary glands removed at weaning and subsequently maintained on a milk diet fortified with copper, iron and manganese, suffered a significant reduction in growth rate when compared with controls with intact salivary glands. This difference was apparently not related to variations in food consumption. It was further reported that the desalivated animals had a pronounced rusting of the fur.

In reviewing the literature, they noted that Higashijo,³ a Japanese worker, had reported that the removal of the submaxillary glands and ligation of the parotid gland in young rats resulted in hypertrophy of the uterus in the female and atrophy of the testes in the male. They further noted that Lacassagne⁴ had shown a sex-linked histological difference in salivary glands and that the administration of testosterone changed the submaxillary gland of the female mouse to the male type and the reverse was produced when the male mouse was given folliculin. Accordingly they concluded that a relationship existed between the sex glands and the salivary glands. Subsequently, additional support for the concept of a gonad-salivary gland relationship was found in the researches of Shafer and Muhler.⁵

Information has been accumulating recently that suggests a salivary gland-thyroid gland interdependence. Evidences of this relationship can be found in the finding of Barker and Schwartz⁶ that the salivary glands are among the tissues whose energy metabolism is controlled by the thyroid gland. The nature of this relationship has been explored rather extensively by Faucett and Kirkwood.^{7,8} These workers have reported that next to the thyroid gland the submaxillary and parotid glands contain the greatest amounts of the enzyme tyrosine iodinase. According to them, this enzyme functions in the thyroid to synthesize organically bound iodine compounds while in the

*Delivered at the combined C.D.A.-O.D.A. meeting in Toronto, May 1955.

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submaxillary and parotid glands there is a reversal of this function and organically bound iodine compounds are degraded. On the basis of experimental findings they are of the belief that the submaxillary and parotid glands may be considered to function as reverse thyroids.

Muhler and Shafer⁹ in an unrelated study have presented data that the thyroid-salivary gland relationship may be of significance in modifying experimental dental caries susceptibility. They have reported that the addition of desiccated thyroid to a caries producing diet reduces a dental caries in the rat to the same degree as sodium fluoride ingestion. They also observed that when the activity of the thyroid gland is markedly decreased by thiouracil feeding, dental caries in the rat was significantly increased. Continuing their researches with rats, Muhler and Shafer¹⁰ have presented data indicating that testosterone increases the anticariogenic effect of desiccated thyroid even though testosterone itself is without effect on the incidence of experimental dental caries. In support of a suggested thyroid-gonad-salivary gland relationship they call attention to the observation of Grad and Leblond¹¹ that the administration of thyroxine and testosterone to gonadecto-

mized, thyroidectomized rats results in a restoration of the normal size, granule content, and cell number of the serous tubule of rat submaxillary glands.

From a consideration of the researches reviewed briefly herein, it is increasingly obvious that the salivary glands have some direct relationship to the thyroid gland and very probably some indirect relationship to the gonads. It is further evident . . . at least in experimental animals . . . that these associations may have some influence on dental caries attack rates. It may be anticipated that continuing researches will clarify the mature and clinical importance of the relationship.

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I do not choose to be a common man, it is my right to be uncommon if I can. I seek opportunity, not security. I do not wish to be a kept citizen, humbled and dulled by having the State look after me. I want to take the calculated risks: to dream and to build, to fail and to succeed. I refuse to barter incentive for a dole. I prefer the challenges of life to the guaranteed existence: the thrill of fulfillment to the stale calm of Utopia. I will not trade freedom for beneficence nor dignity for a hand out. It is my heritage to think and act for myself; enjoy the benefit of my creations; and to face the world boldly and say, this I have done.

Dean Alfange

The Fortnightly Review, August 1, 1955.

The dental profession and the challenge of to-day*

by LORNE D. HASELTON, D.D.S., Saskatoon

The profession of Dentistry has progressed and advanced tremendously during the last century, by means of a long evolutionary process. Over this period many important decisions have been made and we find that to-day presents one of the greatest challenges that ever confronted our profession. The challenge to which I refer, is the provision of leadership. The future of the dental profession is dependent upon the leadership that we, as members, are prepared to provide. Over the many years we have been given the recognition of a profession. If we wish Dentistry to maintain its proper place as a profession then we must accept great responsibilities—as individual dentists—as local societies—as provincial associations, as a Western Canada Dental Society and particularly as a Canadian Dental Association. We are living in a critical era—one in which the public makes demands in a manner hitherto unparalleled. We must meet the challenge and we cannot risk lying in the doldrums of complacency.

What is the proper procedure to meet this situation? I think the very first step is to take immediate action to strengthen our National Association in a financial way. By so doing our Canadian Dental Association will be enabled to complete present projects and to expand into other fields that are deemed advisable. The Canadian Dental organization has been stymied to a large

extent by lack of finances.

I wish to refer briefly to only a few items in particular as to the important activities of the association.

Firstly, I feel compelled to say that the annual visitation by the President and Secretary of the C.D.A. has moulded the profession together as nothing else could have done. These men have established an *esprit de corps* that never existed before. The ability, the interest and the enthusiasm of these men have provided a very much required inspiration to the profession. Upon hearing their reports and on reading the transactions of the C.D.A. each year, one soon realizes the stature of our Association. One grasps the significance of the responsibilities placed upon these officers and the value of their leadership. Not only these men but the members of the Board and Committees of the Association sacrifice considerable of their time and energy for our benefit. By so doing, they place a direct responsibility upon the individual members of the profession to accept our fair share.

Our Association is not able to carry out the necessary program so essential to-day when health matters are in a state of flux. It requires greater financial support by way of increased annual fees. On reviewing the report for the year 1954 it is evident that much progress was thwarted because of the lack of finances. This means that desirable activities cannot be expanded and new ones cannot be started. If we as a profession are to meet our responsibilities, then we must continue to grow, to accept the chal-

* The Presidential address to the Western Canada Dental Society Meeting, Regina.

enges as they present themselves and we must offer concrete leadership particularly through our national organization. We had an example this past year of the value of leadership offered by the C.D.A. office. In Saskatchewan, there arose the question of the New Zealand Dental Nurse plan. It was the good work and leadership of our National Secretary that clarified this situation.

Then again, our Association provides among many things the many valuable publications, the Pension-Assurance Plan and advice regarding legislation in any province. The office is ready to provide assistance and leadership at any time to any member or to any society in any province, on any matter that is pertinent to our profession.

I would like to refer to the work accomplished by the Council on Dental Education. As you must already know the work of this committee has been such that it will produce profound results upon the future standing of our profession. This committee carried out a survey of the training facilities and of the necessary qualifications for enrolment in our dental schools. The need for the work of a Survey Team was prompted by the necessity for uniform minimum standards. It was necessary to appraise each educational college as to its tangible assets and its ability to graduate dentists of a high calibre. They made the survey. The survey is still in progress and has been assisted financially by the Kellogg Foundation up to the present. A continuing need exists for this type of work and it will be necessary shortly for the Association to take over the whole financial responsibility. Many important observations for improvements with concrete suggestions for implementation have been made and adopted by the schools. The tasks assigned to this committee were rather immense but the results of this work will be vital to the future of dentistry.

Much and varied is the work of our

headquarters' staff. There are many items to which time will not permit reference. Sufficient to state that the functions of our headquarters are of vital importance and there is a need for an expanded programme.

The field of Dental Research is one that must receive greater attention than it ever has before. It requires tremendous expansion. The base line of a scientific profession is research. In Canada, Dental Research is just beginning to be explored as compared to that which has been accomplished in the way of Medical Research. We are faced with inadequate physical facilities, lack of trained personnel and poor financial support. Some solution must be found for adequate Dental Research. We must interest financial people or institutions on behalf of this problem.

There are ever so many problems to be solved; the cause of dental decay, methods to prevent it, the serious need for more training facilities, the delegation and control of technical procedures, the establishment of public health programmes, the education of the public in preventive dentistry, etc.

There is such a vast amount of dentistry that needs to be done. We as a profession have an obligation to find a reasonable solution to care for the dental needs of all levels of society. The profession knows that the assignment of certain items of work to less prepared persons is inadvisable, but we also know that we cannot ignore the responsibility placed upon our profession by giving it the exclusive privilege of attending to the oral cavity. This is our privilege and responsibility.

In conclusion, I would say that this is the challenge to each dentist—to each dental society—to each provincial dental association, and particularly to our Canadian Dental Association to accept the full and proper responsibility and to provide the necessary leadership. I admonish you ladies and gentlemen to accept this challenge and to do so with vigor and determination.

ABSTRACTS

A new approach to the treatment of common and refractory gingivitis.

by LEON HERSCHFUS, D.D.S., Detroit, Mich.

Oral Surgery, Oral Medicine, and Oral Pathology,
August 1955.

Hydrocortisone acetate dental ointment with Terramycin, each gram containing 30 mg. of Terramycin hydrochloride and 25 mg. of Cortil (hydrocortisone) acetate, was used four times a day by twenty-six patients.

In eleven cases of mild or subacute gingivitis, all patients manifested definite evidence of improvement after seventy-two hours of treatment and were

asymptomatic after seven to ten days of treatment.

In nine cases of acute gingivitis, six patients manifested improvement after ten days and the remaining three improved after three weeks. All patients evidenced complete remission after several weeks of treatment. Each was advised to continue the ointment twice daily (morning and bedtime) for an additional few weeks.

The six cases of severe chronic gingivitis with spongy and hemorrhagic gum tissue manifested favorable progress and are still under treatment.

When and why are removable tooth replacements indicated? When and why are multiple abutments indicated?

by ALLISON G. JAMES, D.D.S., Beverly Hills, California.

The Journal of Periodontology, July 1955.

Replacements of missing teeth which require stabilizing on the opposite side of the arch for the benefit of the abutment teeth should be removable in type.

The larger the number of abutment teeth which may be used, the more stabilizing the effect on the whole masticatory mechanism.

Interattachments of abutment teeth which do not preclude all individual

movement are more beneficial than rigid soldered interattachments.

Where distal extensions are necessary, the type should return the saddle to rest position through inherent quality of the appliance; this reduces the tendency of ridge absorption almost completely.

If anterior portions of the dentition are to be replaced in conjunction with distal extensions a better result is obtained by making the anterior portion a part of the removable appliance than by utilizing fixed replacements in the anterior portion. This method produces an effective counter-balance and reduces stresses on the distal abutment teeth. Furthermore, it frequently allows better aesthetics in anterior replacements where ridge resorption has been marked.

Demonstration Models for Paedodontics.

by JOSEPH F. BURKET, F.S., D.D.S., F.A.C.D.

Massachusetts Dental Society Journal, July, 1955.

Complete dental treatment for children is fast becoming a significant factor in the general practice of dentistry. In a period of a few years the concept of dentistry for children has changed from one of "temporary fillings and extractions" to thorough restoration of the dental defects and consideration of the entire oral cavity. Emphasis is being placed on preventive as well as reparative treatment. Through lack of education the general public is not cognizant of the importance of dental health for children. Intelligent teaching of the parents of children, by the dentist, is required to inform them of the dental needs of each particular child and the results of neglect of the primary dentition. An ample supply of teaching models is a valuable aid to the dentist in presenting this instruction.

Three types or series of models are useful in case presentation and treatment planning. These are: (1) Models of normal primary, mixed and permanent dentition; (2) Models showing various dental defects including results of premature loss of primary teeth; (3) Models demonstrating different types of restorative and corrective appliances.

The following is a technique for producing these models:

Alginate impressions of the teeth are boxed with green boxing wax.

Excess water is removed from impression with compressed air.

Acrylic resin polymer, in tooth shade, is carefully poured into the impressions of the individual teeth. This is easily accomplished using a small clean bottle, the lid of which has been perforated once with a number four to six round bur.

The powder should fill the teeth portion to the gingival margin.

The tooth shade acrylic is next saturated with the liquid monomer. At this stage it is advisable to gently vibrate the impression. In producing models where small anterior teeth are present a small plastic instrument or plugger is used to tamp the material and release any air bubbles which may be present.

The wet acrylic will settle. Additional powder is applied and again saturated with liquid. The mix starts to jell in a few minutes. Should any of the acrylic flow on the gingival portion of the impression it may be pushed to the center with a small spatula.

The pink or remaining part of the model is poured immediately with a soupy mix of the pink polymer and self-curing monomer. A paper cup is ideal for a handy, throw-away mixing bowl.

The poured impressions are placed under cold water as soon as the gloss starts to disappear from the surface. Considerable heat is produced during polymerization of a large bulk of the resin, in turn releasing gases which cause extreme bubbling in the model. The cold water does not interfere with polymerization but prevents these gases from forming thereby eliminating porosity in the finished product. The models may be separated from the impression in 30 minutes. Several models may be prepared from the same impression if care is used in separation.

Trimming and polishing of the base portion of the model is all that is required. The entire model is then sprayed with an acrylic model spray or a similar clear acrylic spray and allowed to dry for an hour. The result is a well-polished model.

Preparations may be cut in the teeth and various types of restorations and appliances constructed and placed to demonstrate their uses and advantages to the parents of paedodontic patients.

Sugar, Malnutrition and Dental Caries.

by BHIM SEN SAVARA, B.D.S., M.S., Eugene, Oregon.
North-West Dentistry, July 1955.

Persons consuming refined sugars in excess alter their food habits, exist on malnourishing diets, and have poor general health. This is especially true of children and teenagers. There is some evidence that excessive sugar consumption and unbalanced diets also affect the calcification of the teeth and increase their susceptibility to dental caries. The association of sugars to dental caries has been further proven. Definite evidence of the presence of variations in caries susceptibility resulting from the physical nature of sugars and other foods, frequency and time of eating is available.

Eliminating excessive consumption of refined carbohydrates would tend to reduce drastically the incidence of above illnesses. However, as complete deletion is not possible in our society, a program

of reduced intake with added precautionary measures would be of value.

The "sugar appetite" can be destroyed, good food habits established, and dental decay prevented if the following recommendations are adhered to:

Quantity of refined carbohydrates consumed should be reduced, whereas the hard and sticky sweets should be completely eliminated especially between meals.

Frequency of eating sweets should be reduced by:

- (a) Eliminating between meal snacks of sweets.
- (b) Changing between meal snacks to fruits, nuts, whole grain cereals or proteins.

The habit of eating properly balanced meals should be formed. This will aid in eliminating the desire for between meal snacks.

Children should be taught to brush their teeth or rinse their mouths immediately after eating sweets or drinking sweet beverages.

Panoramic Tomography: Pantomography.

by Dr. SYDNEY BLACKMAN

The Dental Practitioner, July 1955.

A new form of extra-oral radiography has been devised by Dr. Yrjo V. Paatero, of Helsinki, who, with a special apparatus developed by him in Finland, is able to record on an ordinary flat X-ray film any curved layer of an object. It is hoped that before the end of this year pantomography will prove to be a reliable and useful method of radiography, especially in the dental field.

The method of X-ray examination involves the moving of the X-ray tube in

one direction while the film moves in the opposite direction, at a proportional rate. The film and tube rotate about an axis in the plane which it is desired to radiograph.

The effect of this contra-movement is that there is one "layer" of an object which is constant in relation to the tube and to the film, because the movement is in constant ratio, and the shadow of every particle in that "layer" will fall on different parts of the film and consequently become blurred.

Pantomographic roentgenology is distinguished from all the above tomographic methods in that it produces panoramas of the different layers of a curved

object, and hitherto its main application has been concentrated in the radiography of the face and teeth. For this work the pantomograph consists of a motor-driven dental chair on which is fixed a special craniostat, and, in revolving, it activates a disk-like table carrying the film on a holder. The technique is based on the fact that the craniostat and the film table must be of the same diameter and each moves around its own axis, in the same direction with the same angular velocity. Therefore, at given points, equidistant from their respective axes on object and film, there is a common linear velocity and the points at a given moment are stationary with respect to one another.

In pantomography the X-ray tube is stationary and the X-ray beam is directed

postero-anteriorly through the patient's head at the rotation axis towards the axis of the film holder on the table and, because the object and film move with the same linear velocity, the layer under review does not shift with respect to the film and is accordingly projected on the sensitive surface. The other layers of the object are blurred on the film because their shadows move on it and appear either as dim foggy stripes or do not appear at all, depending on the density of the object and on some other factors to be considered.

The pantomograph is not intended to oust or supplant the present methods of intra-oral and extra-oral radiography, but rather to implement our means of investigation.

The development of antibiotic-resistant organisms: Its significance to the dentist.

by STANLEY J. BEHRMAN, B.A., D.D.S.

The New York State Dental Journal, August-September 1955.

The development of antibiotic-resistant strains of bacteria is an increasing and alarming phenomenon. It has necessitated larger and larger doses of antibiotics and created a dependence on the availability of newer and different antibiotics. While it is ideal to have sensitivity studies performed when treating an infection, in dental practice the unavailability of cultures of the offending organisms create a dependence upon clinical judgment. The antibiotics employed to help combat a given infection must be properly selected, prescribed in sufficient amounts and used for an adequate period of time.

Today, to overcome an infection at least ten times the dose of penicillin is required as was needed eleven years ago.

In addition, other antibiotics may have to be employed.

This has become necessary because of the man-made phenomenon of the development of antibiotic-resistant strains of organisms.

An estimated fifty per cent of the general population are nasopharyngeal carriers of staphylococci. Of these a large number carry resistant strains. The percentage of carriers of resistant organisms is steadily increasing. Nasopharyngeal carriers are usually hand carriers.

The theories of development of these strains has been reviewed as has been the reaction of the host to bacterial invasion.

The presence of these antibiotic-resistant organisms has resulted in (a) an increasing difficulty in controlling infections; (b) increased danger of operating in the presence of acute infections, and (c) cross-contamination of wounds. It is predicted that root canal infections will become more and more stubborn to antibiotic treatment.

Present Status of Knowledge Concerning the cleft palate child.

by ROBERT M. RICKETTS, D.D.S., M.S.,
Pacific Palisades, California.

Journal American College of Dentists. June 1955.

Approximately 100,000 children in the United States now need or are receiving care for cleft lip and palate defects. It may be slightly increasing and there is no known preventive. It constitutes one of the most serious habilitation problems due to the variety of functions with which it is concerned.

A great deal of research in growth has been made possible by methods of x-ray measurements. Such radiographic studies have suggested that radical surgical procedures employed in the past have inhibited jaw growth. In addition, speech results have not proven satisfactory in many surgical cases. Interest in growth and speech have, therefore, produced revised surgical techniques and a more conservative approach to the problem. Removal of adenoids is almost condemned by some investigators.

It is obvious that the cleft lip and palate anomaly is not a single entity, and that proper evaluation relies on certain diagnostic criteria. First of all, parts may

be unusually large or small. Secondly, deformity may be present. Also, parts may be normal and well formed but may be poorly related or out of proportion to adjacent structures. Finally, growth prognosis of all structures must be considered because tissues do not remain static. These criteria extend the area to be studied to include the framework of the face, the base of the skull and literally all the muscles of the head and neck; therefore, the physiology of respiration, of speech, of deglutition and of mastication must be known in order to be properly evaluated.

Evidence of this situation is found in the recent trend to the team-approach of handling cleft palate problems. The team is composed of specialists of the medical, dental and speech-psychosocial fields. Their combined talents are required to provide a complete and economic habilitation program.

While surgery in general has become somewhat delayed and less extensive, dental management has become instituted at an earlier age. The general conclusion may be drawn that growth and development of emotional, mental and physical aspects underlie treatment for the cleft palate patient.

Depth of Incision in Gingivectomy.

by JENS WAERHAUG, D.D.S., Ph.D., Minneapolis, Minn.

Oral Surgery, Oral Medicine and Oral Pathology.

1. An incision made at the bottom of the pocket will remove the entire "epithelial attachment."
2. A pocket depth of zero cannot be maintained for any length of time.
3. New pockets can redevelop as an upgrowth of soft tissue along the tooth from the line of incision.
4. New pockets can redevelop as a downgrowth of epithelium along the tooth

surface apically to the line of incision.

5. Some unknown factor seems to determine that the tooth surface has to be covered by a soft tissue cuff of some width coronally to the upper periodontal fibers. A combination of the situations described under 3 and 4 may occur.

6. A gingivectomy may not be extended to the bottom of the pocket, as this technique seems to be followed by some destruction of periodontal fibers with the bottom of the pocket in a more apical position than before the operation.

7. More work has to be done before the ideal depth of incision in gingivectomy can be determined.

A Review of sterilization and disinfection in dentistry.

by M. R. HOLLAND, D.D.S., M.S.D., Minneapolis, Minn.

Oral Surgery, Oral Medicine and Oral Pathology, August 1955.

Although the oral cavity is contaminated with pathogenic bacteria, it is important that we exercise measures of disinfection of our hands, the field of operation, and the instruments we use for oral surgical procedures in an effort to prevent cross-infections and the introduction of extraneous bacteria to which surgically traumatized tissues may respond unfavorably.

Since moist heat has been shown to be the most efficient means of destroying bacteria, it was emphasized that steam under pressure and boiling water should be the methods of choice for sterilization of instruments.

Chemical disinfectants should be used only when moist heat might be decidedly injurious to delicate, cutting-edged instruments.

Pathogenic sporulating organisms which are found in the mouth are few in number and infrequent in occurrence. Under ordinary circumstances, the dentist would rarely treat patients harboring spore-forming organisms and thus he would be unlikely to spread infections caused by these bacteria.

A Preliminary Report on Adrenosem for the Control of Haemorrhage.

by B. C. KINGSBURY, Jr., B.S., D.D.S., F.A.C.D. and H. E. YOUNG, B.S., D.D.S.

The Journal of the California State Dental Association and the Nevada State Dental Society. May-June 1955.

A new type of haemostatic agent has become available which has its primary physiological action within the capillary structure. Here it checks bleeding from a broad capillary bed by causing a correc-

Asporogenic bacteria are eliminated after five minutes' exposure to boiling water, although ten minutes' exposure would be safer and more advisable. Spores succumb after ten to ninety minutes' exposure, depending on the type of bacteria.

The autoclave can provide complete sterilization in a relatively short period of time.

Chemical disinfectants are bactericidal for most nonsporulating organisms after fifteen minutes' exposure, but are ineffective against spores and unreliably effective against the viruses which apparently are responsible for infectious hepatitis and homologous serum jaundice.

This latter evidence, plus the constant threat of deep needle infections, indicates that chemical solutions should not be used for disinfecting needles for injection. Studies have shown that these virus diseases definitely can be transferred from one patient to another due to a careless technique of sterilization of needles and syringes.

After the instruments have been disinfected carefully, they should be stored between clean, or preferably autoclaved, towels in cabinets that are as dust-free as possible. Those instruments not used frequently should be removed from the storage cabinet and disinfected at regular intervals.

tion of excessive permeability and increases capillary resistance. This substance, Adrenosem Salicylate is an oxidation product of adrenaline, but effects no sympathomimetic properties of the latter drug.

Since its action is within the capillaries, its use for surgery where the integrity of the oral tissues is interrupted would seem to be indicated. Further, its use is supported by the fact that no danger of side reactions need be considered and its toxic

dose is relatively that of aspirin and far in excess of its normal administration. It does not affect blood pressure or cardiac rate and volume and no contraindications have been evidenced. No cumulative effects are noted since it is oxidized within twelve hours. Patients prescribed Adrenosem over extended periods of time showed no signs of toxicity.

Administration of Adrenosem may be either orally or parenterally. It is available for oral use in 1 mg. and 2.5 mg. tablets and in a syrup containing 2.5 mg. in each teaspoonful. Vials containing 5 mg. per c.c. are for intramuscular injection. The drug is not given intravenously since it is a hypertonic solution.

Adrenosem has been administered to over one hundred patients for haemorrhage during surgery or postoperative bleeding and has been effective without

exception. The results observed left no doubt as to its therapeutic value. Patients with histories of haemorrhage following extractions are best managed by prescribing one 2.5 mg. tablet one hour before surgery and a like dose every three hours following for approximately two days or longer if necessary. One teaspoonful of the syrup may be substituted if desired. The syrup usually takes less than an hour to be effective. For extreme cases, where excessive haemorrhage results during surgery, or where profound haemorrhage develops following surgery, the intramuscular injection of 5 mg. is more pronounced and action usually takes place within 10 minutes. It should be noted that often the intramuscular injection is painful for a few minutes, and patients not under anaesthesia should be informed of the sensation.

Newburgh-Kingston caries—fluorine study VIII. Combined clinical and roentgenographic dental findings after eight years of fluoride experience.

by DAVID B. AST, D.D.S., M.P.H., Albany, N.Y. ARTHUR BUSHEL, D.D.S., M.P.H., New York. BARNET WACHS, D.D.S., and HELEN C. CHASE, M.Sc., Albany, N.Y.

The Journal of the American Dental Association, June 1955.

This report is based on comprehensive clinical and roentgenographic examinations of 756 children 6 to 10 years old: 374 in Kingston and 382 in Newburgh. This series of examinations, which was completed between eight and nine years after initiation of the fluoridation of Newburgh's water supply showed that the DMF rate was 60 per cent lower among the Newburgh children than among the Kingston children. The DMF in first per-

manent molars among the Newburgh group was about 50 per cent of that found in the Kingston group. Not a single first permanent molar was missing among the Newburgh children studied, whereas in Kingston approximately 7 per cent of the erupted first permanent molars among the 9 and 10 year old children were already missing. The proportion of children with caries-free deciduous teeth, as defined in this study, was more than three times greater in the Newburgh 6 to 9 year old age group. The DMF rate in Newburgh was increased 13 per cent through use of roentgenographic examination, whereas the rate for Kingston was increased 40 per cent. A detailed analysis of the surface of origin of dental caries in permanent teeth substantiates the impression that fluoridation offers greater protection to the proximal surfaces than to the occlusal surface.

EDITORIAL

An Objective for Teachers in Dentistry

Another new university year has begun in all five dental faculties of Canada. The organized confusion of registration is over and the sessions are already well advanced into the outlined curricula. Many students are commencing clinical instruction for the first time having been successful in their pre-clinical preparation. This is an exciting and an anticipatory time for all students of dentistry.

Others are leaving the more or less confining atmosphere of high school and are entering into the broader realm of advanced education wherein personal responsibility and interest are requisite for scholastic achievement. Some, doubtlessly will fall by the wayside, but most will go on to successful culmination of a course of study which all must admit is increasing in its complexity and in its standards of service. From this year's applicants will come practitioners better prepared for the profession of dentistry than any who have gone before.

It is difficult for those of us who have met the requirements necessary to practise dentistry to realize that those who follow must of a certainty be subject not only to the knowledge we obtained but also to the products of research and clinical improvements achieved by our contemporaries. Knowledge of dentistry does not stand still, but grows in direct relationship to the sum of our experiences whether those experiences be in basic sciences, research or clinical pursuits.

The individuals charged with the duty of providing instruction to the students

have a very grave responsibility. Not only must these teachers constantly strive to present in the time allotted to them the latest information relative to their respective fields, but they must as well attempt to mould or develop within their students an attitude of mind which is peculiar to the professional man. The true professional individual places service ahead of any other consideration. He regards the well being of his fellow men ahead of his own. This is the philosophy for instance which causes a dentist to enunciate such procedures as water fluoridation in the face of ignorance, suspicion, and invective, when the only result of the initiation of such a measure can be a decrease in the need for his services.

The profession is indeed fortunate that in the dental schools of Canada there are so many of our number dedicated to this important task of preparing students for the professional careers which await them. It is particularly significant that those who do give of themselves in this vital work, do so at a considerable personal financial sacrifice. The dentist providing instruction in the schools, is almost invariably a calibre of practitioner who, if he devoted himself completely to private practice, would be able to augment, to a considerable degree, his own personal income.

It is a fact as well that not only do these individuals give instruction on an undergraduate level but are in great demand for graduate attention at various meetings and conventions. Cana-

dian dentistry should be proud indeed of the various faculty members who contribute so much to the common good.

The acquisition of scientific knowledge and the development of technical skills by the undergraduate students are of great importance for the future development of our profession and the welfare of the people we serve. But without the

inculcation and final development of the true philosophy of professional service, no amount of scientific acumen or technological ability will ever achieve for our future practitioners the measure of accomplishment which any profession demands. The fulfillment of this latter concept is the dental teachers' greatest goal.

Book Reviews

American Dental Association Specifications for Dental Materials. By George C. Paffenbarger, D.D.S. and W. T. Sweeney, A.B. Published by: American Dental Association. Pages: 76. Price: \$1.00.

The value of this manual lies, not only in its specifications, but in its current list of Accepted Materials. It contains the answers to the sweeping claims so often made by sales representatives of different dental supply companies. The technical steps in the tests suggest by their details the paramount necessity of the dentist coupling good techniques with good materials for best results.

J. R. Fletcher

Practical Oral Surgery, by Henry B. Clark, Jr., D.D.S. Published by The MacMillan Co. of Canada Ltd., Toronto. Pages: 392. Price: \$8.50.

The author primarily intended that this book should provide a complete text for the undergraduate in dentistry. He has accomplished this end admirably. Further, he has achieved the composition of a reference book which would be a valuable asset to the office library of any and all practising dentists.

Considerable space is given to the selection of patients for surgery insofar as they fall well within the ability of the individual dentist to achieve a satisfactory result. The examination of such a patient and the reaching of an adequate diagnosis

with the aid of clinical and laboratory data is thoroughly discussed.

Instruments, sterilization, minimum essentials, technique, postoperative care, tumours, deformities, infections, specific oral surgical procedures, drugs etc., and hospital practice, are all competently covered in a concise and readable fashion. Many black and white photographs and radiographic films of excellent quality are included in the script.

The final chapter, "The Art of Practice" is a well written section on the philosophy and ethics of all dental practice although particularly applied to oral surgery. The reviewer sincerely feels that the author has made a signal contribution to the profession in the preparation and publication of an excellent book.

R. W. Marshall

Dentistry in Public Health, edited by Walter J. Pelton and Jacob M. Wisan. Second Edition. Published by W. B. Saunders Company, Philadelphia, p. 282. Price: \$6.50.

It is becoming increasingly apparent that an adequate understanding of dental public health is necessary not only by those specializing in this field, but also by everyone practising the profession of dentistry.

Great and significant progress in the field of dental public health has been attained since Pelton and Wisan correlated the first edition of "Dentistry in Public Health" in 1949. It is, therefore,

fitting at this time that this text should be completely revised and rewritten.

To assist those responsible for organizing courses in dental public health for dental undergraduates and students in dental hygiene, there is as yet only this one text devoted exclusively to this subject. Such a text should not only be of considerable interest and assistance to these persons, but also to other professions associated with this important aspect of public health.

Therefore of consequence to such a text is the

collection of material to cover the entire field of dental public health. Furthermore, it would be desirable that such collection were not biased in accent or content by the personal views of the editors or individual authors. In addition, considerable care should be given to ensure that the subject matter be readable and clearly understandable by those for whom the text is intended.

All those engaged in teaching or practising dental public health should assuredly carefully evaluate this edition.

F. McCombie

The Association

Health Insurance Issue

A Federal-Provincial Conference has been announced to meet early in October. Originally it is understood that matters relating to health were not to be discussed at this meeting. Owing to pressure from several of the provinces, national health planning now forms part of the agenda. Several statements on the subject by Provincial Premiers have appeared in the newspapers purporting to express the views of the different Provincial Cabinets. It is to be observed that these statements are not unanimous.

During the summer months considerable activity on health matters has taken place in several provincial governments in preparation for the conference. The outcome of these discussions will be awaited anxiously by all health bodies.

Dr. William Miller Appointed to Board

The College of Dental Surgeons of British Columbia has announced the appointment of Dr. William Miller of Vancouver to the C.D.A. Board of Governors. Dr. Miller has served as a member of the Council on Dental Education for several years. He has been a member of the B.C. Council for some time and

is President of the B.C. College at the present time. Up to the present he has been B.C. Representative to the National Dental Examining Board in which position he is now succeeded by Dr. J. R. Ingledew. Dr. Miller succeeds Dr. H. M. Cline as B.C. Representative on the C.D.A. Board. Dr. Cline has been a member of the Board since 1948 and served as President of the Association for the year 1951-52.

Dr. Hillard Nevin Killed in Hurricane

Dr. Hillard R. Nevin, of Brooklyn, President of the Novocol Chemical Co., was killed on August 12th last with his wife and two children when their boat capsized during Hurricane Connie. He graduated in 1938 from the Faculty of Dentistry, University of Toronto. Dr. Nevin was 42 years old.

Dr. Joachim of Brussels Elected President of F.D.I.

Dr. Albert Joachim, of Brussels, Belgium, was elected president of the Federation Dentaire Internationale at its 43rd annual meeting held in mid-August in Copenhagen. Dr. Joachim succeeds Dr. Oren Oliver, of Nashville, Tenn., who

had served several terms as the F.D.I. president. Dr. C. F. L. Nord, of Amsterdam, was re-elected honorary president and Dr. Harold Hillenbrand, of Chicago, A.D.A. secretary and chief of the U.S. delegation, was re-elected as one of the six honorary vice presidents. Dr. Obed H. Moen, of Watertown, Wis., was named as a new vice president. Dr. LeRoy M. Ennis, of Philadelphia, former A.D.A. president, was re-elected as vice president. Dr. G. H. Leatherman, of London, was re-elected secretary general, and Dr. W. Riis Klausen, of Copenhagen, was elected assistant secretary. Also re-elected were: Dr. W. Stewart Ross, of London, Council Chairman, Dr. H. H. Stones, of Liverpool, editor-in-chief; Dr. J. Stork, of Aerdenhout, Holland,

honorary treasurer, and Miss Dorothy E. Parrott, of London, assistant treasurer.

Dr. Donald Smith Appointed to Senate

Announcement was made on July 26th 1955 by Prime Minister St. Laurent of the appointment of Dr. Donald Smith to the Senate. Dr. Smith becomes the first dentist member of the Canadian Senate. He graduated from Dalhousie University in the year 1928 and practises at Liverpool, N.S. Previous to the last general election Dr. Smith represented his constituency in the House of Commons.

Meeting of Journées Dentaires Internationales de Paris

Members of the Canadian Dental Association are most cordially invited to attend the 39th meeting of Journées Dentaires Internationales de Paris, November 21st-27th, 1955.

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions

AMERICAN PUBLIC HEALTH ASSOCIATION: Nutrition practices; a guide for Public Health Administrators. 1955. 72 pp. illus.

BERNIER, J. L.: The management of oral disease. 1955. 825 pp. illus.

BEST, C. H., and TAYLOR, N. B.: The physiological basis of medical practice. 1955. 1357 pp. illus.

BRAUER, JOHN, C.: The dental assistant. 1955. 398 pp. illus.

CARNAHAN, C. W.: The dentist and the law. 1955. 263 pp.

CLARK, H. B.: Practical oral surgery. 1955. 392 pp. illus.

KRONFELD, R.: Histopathology of the teeth. 4th ed. rev. and enl. and Edited by Dr. P. E. Boyle. 1955. 535 pp. illus.

WIENMANN, J. P., and SICHER, H.: Bone and bones; fundamentals of bone biology. 1955. 508 pp. illus.

Economic Security

"All Men are Mortal"

Part A—Causes and Incidence of Disability.

by E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.,
Consulting Economist, and Administrator of the
C.D.A. Plan.

The first step in estimating the economic hazard to the professional man which is occasioned by illness or accident obviously is a determination of their incidence. Until now the statistical data available on this subject has been largely dependent upon the "experience" of insurance companies. Whilst this has been invaluable so far as it has gone, it has been subject to the necessary limitations that usually those insured were originally selected on the basis of health at the time of original entry; secondly, and perhaps more importantly, the contracts, both individual and group, were cancelled when the experience became too adverse and further evidence thus lost.

We now have available, however, the first reports of the "Canadian Sickness Survey, 1950-51". Undertaken jointly by the Dominion Bureau of Statistics and the Department of National Health and Welfare, we believe it to be the first comprehensive survey of a whole nation's health. The comprehensive statistical information which it affords long will be of the greatest value in all matters concerning cause, incidence, duration, and cost of ill-health. Except where otherwise indicated, all statistics given in this series will be drawn from the "Canadian Sickness Survey".

The experience of the Armed Services during World War II in which more than 40% of all men examined for military service were found physically unfit indicated that we should find no facts in the Survey giving grounds for com-

placency. Nonetheless, it must be a shock to most to learn that 77.6% of the Canadian population suffered "new illnesses" of some degree during the survey year. "Disabling new illnesses"—defined as "illness which causes (a person) to suspend all his normal activities for one day or more"—occurred to 56.0%. Whilst exact figures would vary slightly from year to year, there is no reason to suppose that the year in which the Survey was made differed from the general average.

In more detail, the annual incidence of illness (including accidents) is of the following order:

	No. of persons affected	% of population class
New illnesses of some degree during the year—all ..	10,500,000	77.6
Disabling new illnesses —all	7,580,000	56.0
Males, ages 25 to 44— all illness	1,370,000	71.9
Males, ages 45 to 64— all illness	850,000	67.9
Males, ages 25 to 44— disabling illness	920,000	47.6
Males, ages 45 to 64— disabling illness	570,000	45.7

Two facts revealed by these figures are of interest as contrary to popular conceptions: first, that the incidence of illness amongst mature men is not as far below that of women and children as is generally supposed; second, that the incidence of illness amongst older men is less frequent than amongst the younger. This corroborates the experience of the C.D.A. Plan to-date in which a greater number of partial or wholly uninsurable cases has been found amongst the younger members.

It frequently has been emphasized that in a statistical sample as small as even the total membership of the C.D.A. gen-

eral statistics are subject to appreciable variation at any one time. But over a reasonable period, there is no reason to assume substantial departure from the general average. Applying the statistics of the Survey to the Profession, the following would be the average yearly incidence of illness:

All illnesses: dentists under 45	1,905
All illnesses: dentists over 45	1,794
Disabling illnesses: dentists under 45	1,261
Disabling illnesses: dentists over 45	1,198

Having discovered the formidable volume of illness, attention now turns to causes. Preliminary figures only are available under the Survey, and without analysis as to sex or age groups, but the common cold is reported responsible for 24.73% of all illness with other respiratory diseases accounting for an additional 18.2%. Cardio-vascular, gastro-intestinal, and dermatological conditions rank well up in the "fifteen most commonly reported conditions", but their significance in relation to mature men awaits the

further analysis. It is of interest to note, however, that "accidents, poisonings, and violence" accounts for only 4.44% of all illness.

Studies of disabilities amongst members of the dental profession are available, however, in the reports of the Mayo Clinic and the Newark Clinic. Statistic dissymetries arise in these because the dentists concerned were voluntarily reporting to the Clinics and the cases do not represent a strict statistical sample, but the studies are important and significant:

Category	Mayo Clinic	Newark Clinic
1. Anxiety State (reported as exhaustion state by Mayo)	18.7%	42.1%
2. Gastro-intestinal	25.6%	35.7%
3. Pneumatic	11.4%	25.0%
4. Cardio-vascular	16.5%	30.5%
5. Occupational (principally dermatological)	5.9%	1.7%

The next article will deal with the question of the duration of disability in relation to the incidence and causes given above.

The Corps

The R.C.D.C. (Militia) summer training was especially successful this year both in numbers attending and in the calibre of field training accomplished. A total of 188 attended comprising 102 dental officers, 25 non-dental officers and 61 N.C.O.s. and men. Numbers were about equal at each of the three regional camps at Utopia, N.B., Niagara, Ont. and Sarcee, Alta.

The A.D.D.S. Eastern Command, Colonel J. F. Edgecombe, donated a silver tray for annual competition among the dental units at Camp Utopia. This competition, between a sub-section (a dental officer and assistant) from each unit entailed the setting up of the equipment in a mobile dental clinic, its arrangement, dismantling and stowage ready for travel. The trophy was won by No. 53 Dental Unit, Montreal, commanded by Lt.-Col. D. W. Henry.

In addition to those who attended summer camp, several dental officers trained in ships with the R.C.N. or with the auxiliary squadrons of the R.C.A.F.

Major W. H. Harrington recently returned to Canada from the Far East. Major J. G.

Butler has replaced him on attachment to No. 3 Field Ambulance, R.C.A.M.C.

Major J. C. Brick has returned to Canada from Europe having completed a three-year tour of duty with No. 35 Field Dental Unit, No. 1 Air Division. Major E. D. Fraser has replaced him in France.

Lt.-Col. G. E. Shragge recently returned from a three-months' cruise in H.M.C.S. "Ontario". The summer cruise took the "Ontario" from Victoria to Europe and returned through the Panama Canal. Such interesting ports as San Diego, Colon, Copenhagen, Oslo and Jamaica were visited.

Capt. F. B. Lavoie has been promoted to the rank of Major. Major Lavoie, 34, was born in Chapleau, Ont. He saw service in the Royal Canadian Artillery from 1943 to 1946 and graduated in dentistry from the University of Montreal in 1950 having previously received his B.A. from Laval University in 1943. Major Lavoie enrolled in the R.C.D.C. in 1949 and following a tour in the Far East is now employed at North Bay, Ont.

Major Lavoie is married and has two children.

The Provinces

British Columbia

The Dentists' Legal Protective Association of B.C. is a newly formed organization made possible by a grant from the B.C. College of Dental Surgeons, and patterned after a similar organization which has been functioning successfully in Ontario for over 20 years. Through legal counsel, permanently retained, advice will be available not only in everyday relations with patients, but also in legal matters concerning fellow practitioners, landlords, or any problems arising out of the practice of dentistry.

The officers of this association are: Dr. M. J. T. Dohan, President; Dr. R. L. Horne, Secretary-Treasurer; Dr. W. T. James, Vice-President; Drs. F. M. Corbett, B. Kjekstad, S. R. Richardson and T. H. Johns, executive members.

Following a resolution at its last annual meeting, the **British Columbia Dental Association** has now been incorporated as a non-profit society under the Societies' Act of B.C. This move was occasioned by the growth and increasing activities of the association. The advantages of being a legally recognized body include the power to own property, to sue or be sued, to enter into agreements and to receive bequests.

Before incorporation the provincial government was unwilling to enter into agreements with the association and consequently the funds for the administration of the Welfare Plan could not be turned over to the B.C.D.A.

Committee Chairman who are selected annually have been named by Dr. E. E. Martin, President of the British Columbia

Dental Association. Standing Committee head are:

Dental Health—Dr. A. Poyntz.
Public Relations—Dr. W. P. Munsie.
Legislation—Dr. W. A. MacDonald.
Library—Dr. G. A. C. Walley.
Nominations—Dr. C. M. Whitworth.
News Bulletin—Dr. H. Munro.

General and special committees:

Compensation Board—Dr. L. F. Marshall.
Health Insurance Studies—Dr. W. R. Scott.
Hospital—Dr. R. K. Lindsay.
Joint Office Management—Dr. D. J. Sutherland.
Dental Laboratories — Dr. C. R. Hallman.
Dental Economics—Dr. H. L. Purdy.
Convention—Dr. L. F. Marshall.
Membership—Dr. P. L. Rondeau.
D. H. M.

Ontario

The 1955-56 executive of the **Essex County Dental Association** was named at the annual meeting held recently in the Norton Palmer Hotel. Those elected to office are: Dr. J. D. McLean, president; Dr. Ted Wachna, first vice-president; Dr. R. M. Sanderson, second vice-president, and Dr. D. C. Wickens, secretary-treasurer.

British Commonwealth News

The Journal extends congratulations to **Mr. G. K. Greening, B.A., B.Comm., F.C.I.I.**, on his election as President-elect of the Chartered Insurance Institute of Great Britain, which is the oldest professional association of Insurance. This is in recognition of Mr. Greening's signal contributions to insurance science.

In this post he follows in the steps of his father who preceded him, both in the post of President of the Chartered Insurance Institute and Chairman of the Board and

Managing Director of the Beacon Insurance Company.

It should be noted that the Beacon Insurance Company, Underwriters of the Pension and Life Assurance portions of the C.D.A.'s Pension-Assurance Plan, have received the outstanding honour of three presidencies in the Chartered Insurance Institute in the past twenty years; Mr. Greening's father, Dr. C. E. Golding, LL.D., F.C.I.I., present Chairman of the Board of the Beacon, and now Mr. G. K. Greening.

General News

The Canadian dental profession has been saddened by the deaths of two prominent men who have been active in the provision of goods and services to the profession.

Mr. Charles A. McKenna, Managing Director of the S. S. White Company of Canada Limited, has long been outstanding in the dental supply business in Canada.

Mr. McKenna was born in Tottenham, Ontario, the son of the late Dr. Charles McKenna and Mary Ann Durham and was educated at St. Michael's College in Toronto and at St. Jerome's College in Kit-chener.

His career was initiated with the Ash Temple Company Limited in Toronto from whence he went to the S. S. White Company. Then later he worked for a short period with the Goldsmith Brothers Refining and Smelting Company before again returning to the White firm in 1925 where he has been employed ever since. Mr. McKenna was chairman of the dental supply section of the Wartime Prices and Trade Board during the Second World War.

He was a member of Our Lady of Perpetual Help Church and a past-president of the Victoria Curling Club.

Mr. McKenna is survived by his wife, May Garrett, a brother Dr. J. S. McKenna and three sisters, Mrs. J. D. Hayes, Sister St. Charles and Frances McKenna.

Mr. Laurence Earl Thompson, Vice-President of the Dental Company of Canada died following a fairly lengthy illness.

He was born in Brighton, England and was educated at the University of Toronto Schools.

In the First World War he was with the 201st battalion, later transferring to the Canadian Army Dental Corps.

He became associated with the Dental Company of Canada in 1922.

Mr. Thompson was a Mason, a member of the Beaches Lodge, and a member of St. James Cathedral.

He is survived by his mother, his wife, Alice Mercer, two sons, William and Earl, two daughters, Mrs. Robert McAuley and Joyce Thompson and a brother, Dr. Henry A. Thompson of Toronto.

Opponents of water fluoridation frequently claim that the Aluminum Company of America is interested in promoting water fluoridation because it gives them an opportunity to sell sodium fluoride, a by-product of aluminum manufacture.

Dr. David B. Ast, director of the Bureau of Dental Health of the New York State Department of Health, has secured an official statement from the Aluminum Company of America to the effect that the sodium fluoride sold by it was not a by-product of its aluminum manufacture but, on the contrary, was separately produced by generating hydrofluoric acid from fluorspar and neutralizing this acid with soda to form sodium fluoride. Furthermore, according to the Aluminum Company of America, very little of the sodium fluoride produced by it is used for water fluoridation.

New York State Dental Journal
August-September 1955.

Legislation to encourage the establishment of **Voluntary retirement funds** for self-employed persons would remedy an obvious tax inequity, the chairman of the A.D.A. Council on Legislation told the House Ways and Means Committee recently. Dr. Paul E. Jones, of Farmville, N.C., testified at hearings on two bills (H.R. 9 and 10) that would permit limited exemption from income taxes on payments made into individual retirement systems. Pointing out that these tax incentives are already provided for contributors to pension plans of business concerns, Dr. Jones said that the A.D.A. House of Delegates had gone on record in favor of the program. Dr. Jones estimated that there are approximately 75,000 dentists in private practice and thus self-employed. "The enactment of these bills would strengthen our economy by encouraging the vast number of self-employed individuals to obtain economic protection in their advanced years," he said. The bills are sponsored by Rep. Jenkins (R., Ohio) and Rep. Keogh (D., N.Y.). They propose that self-employed individuals be given a tax deferment on a sum up to 10 per cent

of their annual earnings, but not over \$7,500 a year, which can be set aside for retirement income after age 65. The funds set aside would be subject to the existing federal income taxes at the time of withdrawal. The purpose of the bills is to enable self-employed persons to provide for their own retirement during periods of high earnings. At the hearings, Treasury Secretary George Humphrey said that while the Treasury Department was "sympathetic" to the proposals, they should not be approved at this time because of tax losses to the Treasury, estimated at from \$90 million to \$3.5 billion annually. Also appearing on behalf of the measures were representatives of the American Medical Association, American Bar Association, American Farm Bureau Federation and representatives of other groups of self-employed individuals. Accompanying Dr. Jones at the hearings was Mr. Howard Greenblatt, of Chicago, assistant secretary of the Council on Legislation.

The A.D.A. Council on Dental Health reported recently that fluoridation of public water supplies, as of August 1, was in operation in 1,094 communities with combined populations of nearly 21 million. Seventeen of the nation's largest cities are served by the program, the New York Times pointed out last week. In an editorial taking issue with New York City authorities for not acting on the program, the newspaper pointed to the recent action of Chicago's mayor in ordering the start of the program in the nation's second largest city. The text of the editorial, headed "New York Falls Behind," follows:

"We yield to Chicago in few matters worthy of civic pride, but the second largest city has now gone ahead of New York in one important public health

measure. Its mayor has ordered contracts made for fluoridation of water supply, which will benefit not only Chicagoans but also fifty-one suburbs buying Lake Michigan water from Chicago.

New York studies the question while others act. Among the fifty largest cities in the United States these already have fluoridation, which is a proved measure to reduce dental decay in children: Philadelphia, Baltimore, Washington, San Francisco, Pittsburgh, Milwaukee, Buffalo, Indianapolis, Denver, Louisville, Rochester, St. Paul, Providence, Miami, Oklahoma City, Richmond, and Norfolk. These have approved it, but are not yet in operation: Chicago, Detroit, Cleveland, Minneapolis and Fort Worth. Thus, with Jacksonville in a natural fluoride area, twenty-three of the fifty largest cities have fluoridation or have authorized it. As of a month ago, 1,079 communities supplied 20,628,844 population with controlled fluoridation. Millions more are to be served under decisions made.

These major national health organizations have endorsed fluoridation: American Dental Association, American Medical Association, American Public Health Association, National Research Council, Commission on Chronic Illness, American Academy of Pediatrics, United States Public Health Service. In New York City these have endorsed it: all dental societies, all county medical societies, New York Academy of Medicine, Welfare and Health Council.

The case for fluoridation has been proved for years and no case against it has been made anywhere that convinces any of the top medical or dental organizations of the country."

In Memoriam

John Fred Brown — Dr. John Fred Brown passed away suddenly at his home in Winnipeg, on August 3, 1955. He was 52.

Born at Hamiota, Manitoba, Dr. Brown attended the University of Manitoba and the University of Toronto. After seven years of service with the Manitoba Department of Health, Dr. Brown established practice in Winnipeg. He served two years with the R.C.D.C. in the Second World War.

He was a member of the Canukeena, Winter, Granite Curling and Elmhurst Country Clubs. He took a keen interest in the activities of the Winnipeg Dental Society and the Manitoba Dental Association which he represented on the Canadian Dental Association as a member of the Health Insurance Committee.

Dr. Brown is survived by his widow, Alice, two daughters Carol and Nancy and one son Jan.

Percy Edward Clarkson:—Dr. Percy Edward Clarkson died at his residence in Toronto on August 23, 1955. He was 77.

Born in Brockville, Ontario, Dr. Clarkson received his early education at Seaforth and later attended the Royal College of Dental Surgeons from which he graduated in 1902.

Due to ill health Dr. Clarkson had been retired from practice since 1934.

Dr. Clarkson was a past-president of St. Alban's Lawn Tennis Club and also of St. Alban's Lawn Bowling Club. He was one of the oldest members of St. Alban's Church and has been associated with the Bible Club since 1934. He was also a member of the Bird and Field Naturalist Club.

Surviving Dr. Clarkson is his widow the former Carrie Harris, and a brother Dr. F. A. Clarkson of Toronto.

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Thomas Earles Ball:—Dr. Thomas Earles Ball of Toronto passed away suddenly on September 12, 1955. He was 86.

Born in Huron County, Dr. Ball received his early education at Harriston, Ontario and later attended the Royal College of Dental Surgeons of Ontario from which he graduated in 1896. Upon the completion of his studies Dr. Ball began his practice in Arthur, later moving to Harriston and finally settling in Wroexeter where he carried on a limited practice due to ill health.

He was a member of the Masonic Lodges in both Arthur and Harriston and a member of the Public Library Board of Harriston and the Harriston Board of Education. He served in the 33rd Huron Battalion in the First World War.

Dr. Ball leaves his widow, Isabella, and two daughters, Mrs. D. L. MacLean, Toronto, and Mrs. N. Muir, Fort Frances.

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Archibald Burton Babcock: — Dr. Archibald Babcock died suddenly at his home in Toronto on August 29, 1955. He was 62.

Born at Yarker, Ontario, Dr. Babcock received his education at the University of Toronto graduating in 1917.

He was a member of the Academy of Dentistry, Association of Downtown Dentists and had been a demonstrator at the Royal College of Dental Surgeons. He was active in Sports Service League and had been President during World War II. He was a member of the Businessmen's Club.

Dr. Babcock is survived by his widow, the former Edna Grace Jezzard and a daughter, Ella Marie.

Eldon Clifford McKee:—Dr. Eldon Clifford McKee passed away at his home in Peterborough on August 28, 1955. He was 61.

Dr. McKee was born in Listowel but received his education at Parkdale Collegiate in Toronto, later attending the Royal College of Dental Surgeons from which he graduated in 1918. Dr. McKee practised in Seaforth, Brighton and Kirkland Lake finally settling in Peterborough in 1942.

A past-president of the Peterborough and District Dental Society, Canadian Legion, Children's Aid Society of Kirkland Lake, Kiwanis Club of Kirkland Lake, Kirkland Lake Branch of Canadian Concert Association, the Kirkland Lake Curling Club, and the Victorian Order of Nurses, Kirkland Lake, Dr. McKee was most interested in public affairs. He was a member of the Town Council in Brighton and had been a member of the Masonic Order and Oddfellows Lodge. He served in the Dental Corps in both World Wars.

Surviving Dr. McKee is his widow the former Helen Little, a daughter Mrs. O. J. Jessen of Ottawa and a son Dr. T. Douglas McKee of Toronto.

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Alexander Gordon Nutlay:—Dr. Alexander Gordon Nutlay passed away, after a prolonged illness, on September 3, 1955 at Boston, Massachusetts. He was 54.

Born in Papa, Hungary, Dr. Nutlay came to Canada and received his Doctor of Dental Surgery from Dalhousie University in 1940. He then became a member of the teaching staff of Dalhousie.

Dr. Nutlay was a member of the Academy of Oral Pathology, the Corresponding Editor of the Journal of Oral Surgery, Oral Pathology and Oral Medicine and was a frequent contributor to dental literature. He was a Research Fellow at the National Research Council of Canada at Dalhousie University and was a Research Associate at Beth Israel Hospital, Boston.

Dr. Nutlay is survived by his widow, Anna, and son, Andrew.

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Vincent Alexander Armstrong:—Dr. Vincent Alexander Armstrong passed away suddenly in Toronto on September 9, 1955. He was 59.

Dr. Armstrong attended the Royal College of Dental Surgeons of Ontario from which he graduated in 1922. He then began his practice in Toronto's east end where he continued his work until the present time.

Surviving Dr. Armstrong is his widow, Audrey and his sister, Mrs. Carrie Beaton.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1956	Banff, Alberta	June 3rd—6th
1957	Winnipeg, Manitoba	June 23rd—26th

FUTURE EVENTS

Date	Function	Location	Officer	Address
Oct. 18	Dental Alumni of McGill University	Montreal	Dr. Bruce Ward	1414 Drummond St. Montreal, P.Q.
Oct. 19-24	Montreal Dental Club Annual Fall Clinic	Montreal	Dr. Bruce Ward	1414 Drummond St. Montreal, P.Q.
Oct. 23-27	American Institute of Dental Medicine	Palm Springs California.	Miss Marion G. Lewis.	2240 Channing Way Berkeley 4, Cal.
Oct. 23-28	The Mexican Dental Association—Third International Congress	Mexico City	Dr. German Sanchez Cordero.	Asociacion Dental Mexicana, Insurgentes 25713, Mexico 7, Mexico.
Oct. 24	Academy of Dentistry Annual Dinner	Toronto	Dr. Robt. Marshall	200 St. Clair West, Toronto, Ont.
Nov. 24	Academy of Dentistry Winter Clinic	Toronto	Dr. Robt. Marshall	200 St. Clair West, Toronto, Ont.
Dec. 4	American Academy of Dental Medicine Meeting	New York	Dr. George J. Wilkin	45 S. Broadway, Yonkers 2, N.Y.
Sept. 7-14 1957	Congres de la Federation Dentaire Internationale	Rome Italy	G. H. Leatherman Secretary	London, England

SHORT GRADUATE COURSES

Date	Course	Location	Address
Oct. 19-Dec. 14	Minor Oral Surgery	Tufts School of Dental Medicine	Dr. Irving Glickman, Director, Division of Post-Graduate Studies, 136 Harrison Ave., Boston, Mass.
Nov. 7-11	Periodontology	Tufts School of Dental Medicine	Dr. Irving Glickman, Director, Division of Post-Graduate Studies, 136 Harrison Ave., Boston, Mass.
Jan. 4-Feb. 29	General Anaesthesia	Tufts School of Dental Medicine	Dr. Irving Glickman, Director, Division of Post-Graduate Studies, 136 Harrison Ave., Boston, Mass.
Jan. 9-13	Full Denture Implants	Tufts School of Dental Medicine	Dr. Irving Glickman, Director, Division of Post-Graduate Studies, 136 Harrison Ave., Boston, Mass.
Jan. 10-14	Treatment of Periodontal Problems	Tufts School of Dental Medicine	Dr. Irving Glickman, Director, Division of Post-Graduate Studies, 136 Harrison Ave., Boston, Mass.
Jan. 11-Mar. 7	Fractures of the Facial Bones	Tufts School of Dental Medicine	Dr. Irving Glickman, Director, Division of Post-Graduate Studies, 136 Harrison Ave., Boston, Mass.
Jan. 16-18	Splinting in Periodontics	Tufts School of Dental Medicine	Dr. Irving Glickman, Director, Division of Post-Graduate Studies, 136 Harrison Ave., Boston, Mass.
Jan. 22	Orthodontics	Temple University	Dr. Louis Herman, Dir. of Postgraduate Studies, Temple University School of Dentistry, 3223 North Broad St., Philadelphia, Pa.
Feb. 29-Apr. 18	General Anaesthesia	Tufts School of Dental Medicine	Dr. Irving Glickman, Director, Division of Post-Graduate Studies, 136 Harrison Ave., Boston, Mass.
April 9-13	Periodontology	Tufts School of Dental Medicine.	Dr. Irving Glickman, Director, Division of Post-Graduate Studies, 136 Harrison Ave., Boston, Mass.

Northwestern University announces fifteen short postgraduate courses during the 1955-56 academic year. For further information write the Director of Dental Postgraduate Study, Northwestern University Dental School, 311 E. Chicago Avenue, Chicago 11, Illinois.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Nutrition et santé dentaire*

par GUY BOISCLAIR, B.A., D.D.S., Montréal

Je démontrerai au meilleur de mes connaissances ce que l'alimentation et la nutrition peuvent apporter à l'organisme en général et de là aux organes dentaires. Comme il n'y a qu'un pas de l'organisme en bonne santé à la santé dentaire, je traiterai de la santé en général avec des applications dentaires appropriées. Vous verrez dans les paragraphes conséquents qu'une déficience alimentaire peut occasionner des effets fâcheux tant au point de vue général que dentaire.

Mon travail comprend 5 points:

1. Des définitions.
2. Qualités et facteurs influençant l'alimentation.
3. Les besoins du corps humain.
4. Rôles et conséquences de la carence des aliments et des vitamines dans l'organisme.
5. Régime alimentaire conseillé pour une bonne santé.

Définitions:

Je donne ces définitions parce que plusieurs personnes confondent, alimentation, nutrition et diététique.

Qu'entend-on par *alimentation*? C'est l'apport des éléments ou matériaux ou aliments nécessaires au processus de la nutrition.

Qu'est-ce que la nutrition? C'est l'ensemble des processus qui concourent à la croissance et au maintien de l'être en son entier.

Diététique: C'est une science qui traite du régime alimentaire basé sur une alimentation bien équilibrée.

Alimentation bien équilibrée: C'est celle qui comporte des aliments différents les uns des autres dans leurs principes actifs par rapport à nos tissus et dont l'adaptation judicieuse concourt à l'équilibre de notre organisme.

Santé: C'est un état positif qui fait que l'individu sent un parfait bien-être dans tout l'organisme.

De ces définitions, découle un enchaîne-

*Séminaire présenté à l'Ecole d'Hygiène de l'Université de Montréal, le 27 janvier 1955.

ment logique des termes. Une alimentation bien équilibrée dispose les processus de nutrition en vue de la santé de l'organisme en général et de là au bon état des dents.

Qualité d'alimentation:

L'alimentation est un facteur de santé.

On a une fausse notion de la santé, ce n'est pas un état négatif.

L'absence de maladie est un état positif qui fait que l'individu sent un parfait bien-être dans tout son organisme. L'individu en santé ne resterait pas à rien faire, car il s'embêterait. Celui qui cherche à s'évader du travail n'est pas en santé. L'individu en santé a la force et le désir de traverser les difficultés. La santé, c'est une tournure de l'esprit qui fait qu'on voit le beau côté de la vie. L'alimentation, facteur de santé, répond aux besoins de l'organisme. L'être humain ne peut créer; il faut qu'il reçoive de l'extérieur les matières nécessaires pour réparer l'usure. Ces matières peuvent varier quantitativement par individu, mais non qualitativement. Par la quantité, l'alimentation de l'enfant diffère de celle de l'âge mûr, mais, par la qualité, il n'y a aucune différence entre les exigences de l'organisme de l'enfant et celui de l'adulte.

Facteurs de circonstances pouvant influencer l'alimentation:

Hérédité: Est un facteur de circonstance limitative possible, mais c'est l'environnement et non l'hérédité.

Les enfants peuvent avoir une taille plus petite ou égale à celle des parents, ce n'est pas héréditaire, car, si les circonstances et l'alimentation sont convenables, les enfants peuvent grandir plus que leurs parents.

Il n'y a aucune raison qu'un enfant souffre du foie parce que les parents en ont souffert; il peut-être plus susceptible à contracter une maladie de foie mais avec une saine alimentation, il peut l'éviter.

Climat: Un agent physique que nous sommes obligés de subir, selon que l'on habite un pays froid, tempéré ou chaud.

Chimiques: Réactions que peuvent produire certaines nourritures en produisant parfois des toxines.

Microbiens: Dans l'air, la nourriture, le breuvage conditionnés par le milieu où nous vivons, ils diffèrent dans la jungle des pays tropicaux, les régions rurales et urbaines des pays tropicaux; les taudis et les maisons climatisées.

Sociaux: Qui conditionnent nos habitudes de vie. Il est permis de prendre part aux activités sociales, mais souvent ces activités, en s'ajoutant aux activités régulières, affectent notre système par des abus dans l'alimentation, le breuvage, le surmenage. . . .

Nutrition:

Ensemble des processus qui concourent à la croissance et au maintien de l'organisme dans son ensemble et dans chacune de ses fonctions de digestion, absorption, utilisation, élimination.

La nutrition est basée sur des principes de physiologie et de bio-chimie.

Besoins du corps humain.

A—Energie et chaleur (calories)

Il faut manger pour obtenir l'énergie nécessaire indispensable pour accomplir et maintenir la chaleur nécessaire à notre organisme.

B—Matériaux de construction et de réparation:

Il faut bâtir l'organisme qui est composé:

- a) de protéines: acides aminés.
- b) de sels minéraux: qui ont un rôle de régulation, de construction et de réparation.
1—Calcium. 2—Phosphore. 3—Fer. 4—Iode: Ces quatre sont essentiels et il faut choisir des aliments qui en contiennent.
- c) de l'eau: Il n'y a pas d'aliments qui contiennent suffisamment d'eau; donc il faut en prendre en plus que l'eau contenue dans les aliments.

C—Substances régulatrices:

On pourrait mentionner a) des sels minéraux, b) H₂O, c) hormone, d) cellulose.

Vitamines: a, b₁, b₂, b_{pp}, c, d.

La majorité des gens n'en ont pas jusqu'à présent porté grande attention, mais en nutrition, on réalise leur importance, car on sait qu'une insuffisance de ces vitamines peut causer des effets caractéristiques très considérables sur la santé.

Nous avons tous les mêmes besoins, mais la manière de les satisfaire varie avec chaque pays.

Aliments minéraux et leur rôle dans l'organisme.

Les aliments minéraux sont ceux qui contribuent (a) au maintien de la pression osmotique, (b) à celui de la concentration des humeurs et à (c) la formation du substratum des cellules.

Le chlorure de sodium est l'agent principal de cette constante et nous le trouvons notamment dans le sang, la lymphe, les larmes et certaines sécrétions gastriques.

Les phosphates, les bicarbonates, les acides aminés sont aussi importants dans la réaction du milieu interne.

La plupart de tous ces éléments minéraux interviennent dans l'édification des tissus, mais le calcium est l'agent primordial dans la contexture du tissu osseux; il s'adjoint, dans le tissu nerveux, le phosphore, le fluor, le soufre et le fer.

Le phosphore cependant pénètre dans notre organisme; soit sous forme minérale; à l'état de phosphate; soit sous forme organique, dans la chair de poissons.

La chaux et le phosphore forment les trois quarts de la masse des matières ingérées; le phosphate tricalcique et le carbonate de chaux constituent la majeure partie des matériaux calcaires de l'os.

Les aliments riches en calcium et en phosphore sont: le lait, le fromage, le chou-fleur, l'orange, l'épinard.

Parmi les aliments riches en phosphore, nous pouvons mentionner la viande, le lait, le fromage, l'oeuf, la pomme de terre.

Le fer sert à la synthèse de l'hémoglobine. L'homme adulte normal réclame environ de 5 à 15 mgrs de fer par jour. Le jaune d'oeuf constitue la source

alimentaire la plus riche en fer, que nous ayons; il se trouve encore dans certaines eaux naturelles dites minérales et dans la plupart des légumes verts, surtout les haricots.

Le fer paraît réaliser sa fonction à un taux plus élevé quand il est additionné de cuivre; voilà pourquoi l'administration du fer s'est acquise une haute réputation dans le traitement de l'anémie pernicieuse, par suite de sa richesse en fer et en cuivre.

L'iode: Bauman fut le premier en 1895 à démontrer que l'iode était un composant normal de la glande thyroïde et que la teneur de la thyroïde en était beaucoup supérieure à celle constatée dans n'importe quel autre tissu. L'opinion générale veut que la thyroxine constitue le principe actif de la thyroïde. L'activité générale de la glande thyroïde est due aux composés d'iode organique élaborés par elle et déversés dans le sang.

L'action physiologique de la thyroïde s'exerce sur le métabolisme basal: (A) les échanges nutritifs, si importants pour la texture osseuse des dents. (B) la consommation de l'oxygène et (C) l'excrétion de l'acide carbonique.

Il paraît préférable de prendre, dans les aliments, l'iode dont l'organisme a besoin; l'iode organique serait d'une efficacité douteuse. Parmi les aliments paraissant riches en iode, nous avons: les poissons de mer, particulièrement l'aiglefin, la morue, le flétan, les huîtres et les crustacés; le hareng et le saumon en contiennent moins. Nous avons ensuite les feuilles des plantes, les fruits des tropiques, le céleri, les concombres, la rhubarbe, les oignons, les endives, le maïs, les haricots, les carottes, etc. . . .

Conséquences d'un régime privé d'éléments minéraux.

Un régime, par exemple, qui serait composé uniquement de pain, de beurre, de pommes de terre et de riz, amènerait un appauvrissement de l'organisme en calcium, phosphore et fer. Il lui manquerait d'abord un élément de premier ordre, l'azote, qui nous est surtout procuré par la viande de boucherie. Ce régime

produirait, s'il était strict, une altération du squelette; et surtout chez l'enfant en période de croissance, le rachitisme, des troubles d'ossification de la colonne vertébrale se traduisant surtout en scoliose, cyphose ou lardose et puis également des troubles nerveux et des convulsions de toutes sortes.

La carence en l'iode dans l'organisme produit le goître, et, à l'âge précoce, le crétinisme. Il va s'en dire que l'appareil dentaire, si intimement lié au métabolisme général, en souffrira à son tour. En effet, les dents privées des substances minérales nécessaires au maintien de leur dureté, perdront de la résistance aux influences du milieu dans lequel elles vivent; c'est alors que nous verrons apparaître la carie. Conséquemment, si nous voulons que notre profession fasse dignement sa part, dans la lutte contre les maux dont la société souffre, par mauvaise alimentation, il nous faudra approfondir davantage le problème de la nutrition et de la diététique, pour réaliser l'application d'un régime alimentaire bien équilibré. Pour réaliser le développement du système osseux suivant un métabolisme convenable, nous aurons donc à étudier les vitamines et à comprendre l'influence qu'elles exercent dans l'organisme humain.

Avant d'étudier en détail les matériaux de construction et de préparation, revenons un peu sur les lipides, graisses combustibles de réserve.

Pour supporter nos efforts, l'organisme fait appel à ses réserves, autrement nos muscles fourniraient l'énergie nécessaire en se brûlant.

Prenons, comme exemple, les thyphiques; on ne pouvait autrefois leur faire absorber d'aliments et il leur fallait un an de repos pour rebâtir leur muscles.

Il nous faut donc de 25% à 35% de graisse, mais pas trop, car si on en consomme trop le foie s'en ressent; si l'on brûle surtout des graisses, le foie est en travail constant et finit par une dégénérescence d'usure, et nous avons aussi des troubles digestifs.

Malheureusement, on trouve généralement 40% du combustible provenant des

graisses chez les jeunes Canadiens. N'oublions pas que tôt ou tard, il faut payer pour nos fautes de jeunesse; autrefois, cela avait moins d'importance, car la moyenne de vie était 50 ans, mais maintenant les Canadiens peuvent s'attendre de vivre plus vieux, 67-70-80. Mangeons-nous en vue d'une belle vieillesse ou serons-nous obligés, à cause de notre nourriture, de nous mettre au repos à 50 ans?

Les protéines en tant que besoin pour des fins d'énergie et de chaleur ne constituent pas un combustible parfait, car ils ne sont totalement convertibles en combustible. L'azote ne brûle pas et il faut déaminiser les protéines dans le foie; les sous-produits de l'urée et l'ammoniaque doivent être éliminés.

Chez l'enfant, il n'y a pas de mise en réserve et il faut éliminer des quantités considérables de ces poisons, même si l'on dit qu'ils n'affectent pas les reins; une trop grande activité ne peut à la longue que produire une dégénérescence d'usure.

Au début, on se basait uniquement sur les calories, mais lorsqu'on a réalisé l'importance des sels minéraux, de l'eau et des vitamines, des graisses, et des protéines, on a oublié des calories. J'espère qu'on ne nous réduira jamais à prendre uniquement des pilules, car aucun moment de la journée est plus agréable que celui de s'asseoir et manger pourvu que l'on ne fasse pas d'abus.

Quand on mange des aliments ayant les calories en proportion voulue, on a toutes les vitamines et autres substances nécessaires.

Voilà donc en peu de mots ce qui peut être dit des calories. N'oubliez pas, si on mange plus qu'on ne dépense, nécessairement, on engraisse et si on mange moins qu'on ne dépense, on maigrit.

Chez l'enfant, n'acceptons pas la comparaison du poids réel et du poids moyen; avant longtemps, nous aurons le poids moyen des enfants canadiens. Son poids normal s'établit lorsqu'il y a une certaine réserve de tissus adipeux en proportion de sa grandeur moyenne pour son âge. S'il y a une trop grande différence, il faut

étudier l'enfant lui-même, pour savoir, s'il a un développement musculaire ou non. Ceux dont le tissu musculaire n'est pas développé peuvent avoir une réserve raisonnable de tissu adipeux.

Il y a des enfants dont le système osseux est bien développé qui pèsent plus que la moyenne et cependant ils ne sont pas obèses, ils sont normaux.

Mais, si un enfant reste trop longtemps au même poids, il faut être circonspect, car un enfant doit toujours progresser en poids.

A—Protéines: Sont nécessaires, parce qu'elles contiennent des acides aminés, substances qui composent nos propres protéines.

Les protéines nous proviennent de deux sources, animales et végétales, et ne contiennent pas les mêmes acides aminés. Il y en a que l'organisme ne peut synthétiser, d'autres sont indispensables.

Les protéines de provenance animale sont complètes et contiennent des acides aminés pour la croissance.

Les protéines de provenance végétales sont incomplètes, à l'exception de la fève soya, et ont besoin d'être complétées par la présence de protéines de provenance animale.

Il n'y a pas d'individus qui ait efficacité pleine et entière seulement avec des protéines de provenance végétale, il faut qu'il y ait association des deux.

Généralement, notre nourriture contient un excès de protéines animales sur les végétales et les acides aminés essentiels pour les compléter. *Pour favoriser la croissance:* Lorsqu'il y a formation de tissus nouveaux, 50% de protéines de provenance animale et 50% de protéines de provenance végétale. (enfants, femmes enceintes etc.).

Pour réparer l'usure (chez l'adulte) 33% est suffisant. Ce qui réduit considérablement le budget, car les protéines animales sont très coûteuses.

Il n'est pas difficile d'obtenir des protéines de maintien si on a besoin de 50 grams: 4 on. de viande ou 3½ on. de poisson, ou 1 on. de fromage égalent 7 grams, 1 on. de fraises, 1 gram lait, oeuf, 2 légumes convenables.

Définition: D'après A. Théroux, "Les vitamines sont des substances qui, à des doses infinitésimales, agissent, en permettant le métabolisme et l'assimilation des alimentaires, nécessaires au développement et à l'entretien des tissus et des cellules et au fonctionnement des divers appareils de l'organisme."

Rôles des vitamines.

Encore d'après Théroux, "Le rôle des vitamines est une question de métabolisme. Il consiste à permettre la transformation des principes alimentaires en des substances capables d'être incorporées aux cellules vivantes et aux tissus. Du fait qu'une cellule n'est pas composée d'une seule substance, qu'elle contient à la fois des protides, des lipides, des glucides et des sels, elle est sous la dépendance de plusieurs vitamines et c'est pour cette raison que les avitaminoses ont souvent une étiologie plurale."

Nos régimes sont presque toujours carencés, au moins en hiver, et les avitaminoses frustrées sont beaucoup plus fréquents qu'on ne le croit. On peut estimer que la plupart des affections chroniques et des petites misères qu'on observe dans nos races civilisées peuvent être imputées à des hypovitaminoses. Plus nous avançons dans l'étude des vitamines, plus nous nous rendons compte de leur rôle primordial dans le métabolisme alimentaire.

La fonction des vitamines paraît être complétée par celle des hormones. Celles-ci, en effet, agissent comme agents régulateurs; elles maintiennent le métabolisme des substances alimentaires dans les limites compatibles avec l'état normal. Il en est ainsi, par exemple, de la sécrétion des glandes parathyroïdes, dont le rôle consiste essentiellement dans la régulation de la fixation des sels de chaux au niveau des os.

Vitamine A:

Provenance: Parmi les végétaux les plus riches en vitamines A, on peut citer la carotte, la laitue, le chou, l'épinard, les fèves, les pois verts, la tomate, la citrouille. Parmi les fruits, on peut mentionner: la banane, l'orange, le raisin,

la pêche, l'abricot, les cerises, les prunes, la poire, la pomme. Les pelures de la plupart de ces fruits constituent des sources importantes.

Les aliments du règne animal riches en vitamines A sont les suivants: l'huile de foie de flétan, l'huile de foie de morue, le foie, le jaune d'oeuf, le beurre, le fromage, le lait.

Fonctions: La vitamine A 1) favorise la croissance, 2—augmente la résistance à l'infection, partant protège contre l'infection de la bouche et la carie, prévient l'héméralopie et elle est anti-xérophtalmique.

D'après Randouin et Simonet, la vitamine A préside à l'assimilation des lipides et favorise ainsi la croissance. Cette vitamine est nécessaire à l'intégrité des muqueuses. Même une légère déficience en vitamine A altère les membranes du nez, de la gorge, de la bouche etc., qui deviennent ainsi moins capables de résister à l'invasion microbienne. Apparaissent alors les végétations adénoïdes, les otites moyennes, les trachéites, les bronchites à répétition. Du côté intestinal, ce sont: soit des diarrhées, soit des constipations aboutissant quelquefois à l'entérite. Il en irait de même de la muqueuse utérine et, après Edward Mellanby, la vitamine A concourrait à prévenir et à guérir l'infection puerpérale. Ward a démontré en 1935 que le pourpre visuel est une combinaison de vitamine A avec une protide. Cette substance diminue durant le jour et augmente à l'obscurité. Ce changement est intimement lié à l'élimination.

La vitamine A est utilisée durant le jour et se fixe sur la substance chimique qui devient pourpre durant la nuit. C'est pourquoi, une déficience en cette vitamine produit de l'héméralopie. Cet état, caractérisé par une cécité relative à une faible lumière, est plus fréquent qu'on ne le croit ainsi que l'ont démontré les Drs Jeans et Zentmire, de l'Université d'Iowa.

Ils ont constaté qu'environ un quart des enfants examinés présentait une diminution de l'acuité visuelle qui est revenue à l'état normal, et cela, dans la

plupart des cas, dans l'espace de quelques jours, par l'administration de l'huile de foie de morue riche en vitamine A. On a conclu de ce fait que nombreuses sont les personnes qui ne prennent pas suffisamment de cette vitamine.

Un ou plusieurs aliments riches en vitamine A doivent donc, chaque jour, être donnés dans tous les cas où les cellules de l'organisme se multiplient activement: aux enfants, aux femmes enceintes et nourrices.

Vitamine B:

Provenance: Dans la pratique, les aliments qui renferment la vitamine B¹ contiennent également la "B²". Les animaux en retiennent des quantités variables dans leurs tissus, mais ils ne l'accumulent pas dans les mêmes proportions que la vitamine A.

Parmi les sources végétales, les graines constituent les réservoirs les plus riches en facteurs "B", puis viennent les fruits et les légumes verts. Dans toutes les graminées, les sels, les lipides, les protides, les vitamines sont contenus dans la membrane qui entoure l'amande et le germe. Les principales sources se trouvent ainsi la levure, le germe de blé, le cuticule des graines, l'asperge, la tomate. Dans le règne animal, on peut mentionner le foie, le jaune d'oeuf. Le lait n'en contient pas beaucoup, aussi, les pédiâtres ont-ils tendance d'ajouter à cet aliment quelque source riche en vitamines.

Fonctions: La B¹ est la vitamine antibériberique ou d'équilibre nerveux. Elle paraît jouer un rôle essentiel dans la respiration des tissus et intervient particulièrement dans le métabolisme des glucides, suivant l'opinion des auteurs du rapport de 1932 sur les vitamines du Médical Research Council d'Angleterre.

C'est ainsi que la B¹ favoriserait la croissance. Les convalescents en ont un besoin particulier, car la dépense est augmentée au cours des maladies fébriles. On sait de plus combien l'alimentation est réduite chez ces malades; aussi leur organisme en devient très dépourvu à la fin de la maladie. Un des premiers symptômes que produit la déficience en vitamine "B²" est l'anorexie. Son ad-

ministration augmente rapidement l'appétit.

Vitamine C:

Provenance: Les meilleurs sources d'acide ascorbique sont les fruits frais à jus acide surtout les citrons et les oranges, l'ananas, la tomate; les légumes verts, chou, laitue, épinard. Tout végétal en voie de développement et frais renferme le facteur "C". Les tomates en boîtes se recommandent particulièrement pour leur contenu en acide ascorbique, mais aussi pour leur vitamines "A" et pour leurs substances minérales.

Fonction: La fonction de l'acide ascorbique est nettement anti-ascorbique. Le scorbut est une maladie caractérisée par des hémorragies graves, des lésions osseuses, la tuméfaction des articulations et des gencives, la chute des dents. Dans la forme complète et classique du scorbut, on observe les symptômes suivants: inflammation des gencives, qui se couvrent de fongocytes, principalement dans les espaces interalvéolaires, gingivite expulsive, salivation. Les malades se plaignent de douleurs articulaires et on remarque un gonflement des articulations, principalement au niveau des genoux; on a aussi signalé des oedèmes des jambes et des cuisses se produisant surtout le soir. Des taches ecchymotiques se montrent sur la peau, se compliquent souvent d'hémorragie. Il existe enfin une anémie profonde. Assez nombreuses sont les personnes qui présentent une déficience relative en acide ascorbique. Elles en prennent suffisamment pour se préserver du scorbut à l'état aigu, mais souffrent de douleurs fugaces dans les membres. Les douleurs soi-disant rhumatismales des enfants dépendent souvent de cette cause. Cette vitamine serait particulièrement importante pour le maintien à l'état normal des capillaires et des artères.

Enfin, une des manifestations les plus marquées d'une insuffisance en acide ascorbique est sa répercussion sur les dents. Cette vitamine joue un rôle important dans le développement et le maintien des dents saines. Chez les animaux soumis à une alimentation scorbu-

tigène, Wolbach et Howe ont constaté la formation d'une nouvelle dentine dans l'espace de quarante-huit heures après l'addition à leur régime d'aliments riches en acide scorbutique.

Un enfant de 17 à 22 livres a besoin de 10 mgr. d'acide ascorbique par jour, soit 15cc. de jus d'orange.

Pour l'adulte d'un poids moyen de 132 livres, la proportion serait de 40 mgr. d'acide ascorbique, soit près de 60 cc. de jus d'orange. Des doses plus faibles ont aussi été proposées.

Vitamine "D":

Provenance: Contrairement à ce que nous avons observé pour les autres vitamines, rares sont les aliments qui nous fournissent de la vitamine "D" en quantité appréciable. On ne peut guère mentionner que le jeune d'oeuf. En contiennent aussi, mais en quantité inférieure et insuffisante: la crème, le foie, le flétan, le thon, les sardines. Ainsi que nous l'avons vu, l'huile de foie de morue fait exception à cette règle, mais il faut ajouter que la teneur de l'huile de foie de morue en vitamine "D" est très variable. Celles de Terre-neuve, puis celles d'Ecosse et d'Irlande, sont les plus riches et celles de Norvège, les plus pauvres.

Fonction: Elles président à l'assimilation et au métabolisme du calcium et du phosphore, d'où leur importance dans la prévention du rachitisme et de la carie dentaire.

Il convient de donner de la vitamine "D" durant toute la croissance. Plus les enfants sont exposés à la lumière, moins ils ont besoin de facteur antirachitique et, inversement, plus ils vivent renfermés et privés de lumière, plus un apport supplémentaire de ce facteur est indispensable. Il est nécessaire de penser aux besoins importants de vitamine antirachitique du fœtus et du nouveau-né; en conséquence, dans les villes, les femmes enceintes et les femmes qui allaitent doivent se préoccuper d'introduire dans leur organisme des aliments renfermant de la Vitamine "D".

Alors que les gingivites expulsives et la pyorrhée alvéolaire sont plutôt du res-

sort de l'avitaminose "A" et dans quelques cas de l'avitaminose "C", les lésions des dents, leurs caries, leurs déviations et leurs chevauchements sont imputables à la carence en vitamine "D".

Les observations de Banting, Hadley, Joy et Hard, sur ce sujet, sont éminemment suggestives. Ces auteurs ont étudié les caries dentaires dans différents pensionnats comparativement avec la nourriture des enfants et l'hygiène de la bouche. Dans le premier pensionnat, les enfants recevaient tous les jours un demi-litre de lait, des fruits et des légumes verts; l'hygiène de la bouche était surveillée; dans ce cas, au bout d'un an, 80% des enfants présentaient des dents saines.

Dans le deuxième pensionnat, dans lequel l'hygiène de la bouche était surveillée mais où la nourriture ne comprenait pas de lait, de fruits, ou de légumes verts dans l'ordinaire quotidien, au bout du même temps, 24% des enfants étaient indemnes de carie dentaire.

Comme notre climat ne favorise pas suffisamment la pleine action du soleil, il devient nécessaire de pourvoir à une administration considérable de vitamine "D" aux enfants. Le grand nombre de cas de rachitisme que l'on constate ne le prouve que trop. Ces considérations établissent l'importance de l'huile de morue dans l'alimentation. Les pédiatres la recommandent maintenant chez les bébés de quelque mois. L'huile agit à doses très petites et son action est très rapide, se faisant sentir au bout de quelques jours. Il n'est pas nécessaire d'administrer les fortes doses que l'on donne, trop généralement. On doit donc considérer l'huile de foie de morue comme un aliment et non comme un médicament. Elle doit entrer dans l'alimentation des enfants au même titre que l'orange qui prévient le scorbut.

Park, qu'on ne peut contester l'autorité, vient d'écrire, à ce sujet, ce qui suit: "Personnellement, je crois que si les femmes enceintes prenaient un bon régime alimentaire, comprenant des légumes verts et beaucoup de lait, si elles passaient une bonne partie de leur temps à l'air et au soleil, de plus, si les enfants

étaient mis en plein soleil un peu tous les jours et prenaient de l'huile de foie de morue au cours des deux ou trois premières années de leur vie, on ferait plus, au sujet de l'éradication de la carie dentaire, que tous les autres moyens mis ensemble et on ferait disparaître le rachitisme de la surface de la terre."

De tout ce que nous venons de voir sur la nutrition et les vitamines, nous pouvons conclure que la connaissance approfondie de ces données nous fournira des indications précieuses dans la dentisterie préventive; mais nous aurons à considérer un autre facteur de prévention qui tient aussi une place importante dans la conservation des dents: c'est le facteur milieu, dans lequel les dents évoluent et sur lesquelles il exerce une influence parfois néfaste. De la condition de ce milieu dépendra la plus ou moins grande immunité contre carie.

Que comprend le facteur milieu? Par facteur milieu nous comprenons: 1— Les aliments introduits dans la bouche, selon qu'ils sont plus ou moins purs ou qu'ils contiennent des micro-organismes capables d'action nuisible sur l'émail des dents.

Certains de ces aliments, tels les hydrates de carbone sont par eux-mêmes des facteurs importants de la carie, parce qu'ils favorisent le développement des microbes acidifiants.

2—La bouche elle-même contient en permanence des micro-organismes qui exercent plus ou moins d'influence sur les dents suivant que celles-ci offrent plus ou moins de résistance dans la constitution de leur émail.

Parmi les microbes que la bouche contient, nous trouvons des types acidophiles, tels des *staphylocoques*, des *streptocoques* qui sont acidifiants.

3—La salive aurait aussi une part de responsabilité dans la carie des dents.

Normalement, la salive joue le rôle de tampon qui veille à l'équilibre de l'acidité et de l'alcalinité dans la bouche. Mais que cet équilibre soit rompu par un changement d'état de la salive, nous avons, le plus souvent, une hyperacidité de la bouche.

Ce sera le cas d'une personne souffrant d'acidose due à une diminution de réserve alcaline dans le système. Le sang se charge d'acide et, à cause de l'influence qu'il exerce sur la salive, celle-ci, à son tour, deviendra hyperacide. Conséquemment cet état d'hypérioracidité entravant la réaction alcaline de la salive, les acidophiles auront beau jeu pour désorganiser l'émail de la dent et produire des érosions si difficiles à surmonter.

Nous rencontrons parfois de ces patients, chez qui la réserve alcaline est tellement diminuée, qu'ils souffriront d'intoxication générale par l'acide.

Conclusion: De tout ce que nous venons d'exposer sur le facteur milieu nous pouvons conclure que, dans chaque cas, c'est surtout l'état d'acidité de la bouche qui aurait une action nuisible sur les dents.

Connaissant l'action dissolvante et corrodante des acides, il est facile de comprendre que si les dents exposées d'une part à l'action des débris de nourriture en état de fermentation ou à celle des micro-organismes acidophiles ou encore à celle d'une salive hyperacidité, et si, d'autre part, de par leur constitution,

elles n'opposent pas une résistance suffisante dans leur texture osseuse, elles seront désagrégées et la carie accomplira son oeuvre de destruction.

Règles Alimentaires du Canada:

LAIT

Enfants (jusqu'à 12 ans environ) ... au moins 1 chopine
Adolescents au moins 1 1/2 chopine
Adultes au moins 1 demiard

FRUITS

Une portion d'agrumes (oranges-citrons, etc.) ou de tomates ou de jus de ces fruits, et une portion d'un autre fruit.

LEGUMES

Au moins une portion de pommes de terre; et au moins deux portions d'autres légumes, de préférence jaunes, verts ou feuillus, fréquemment crus.

CEREALES et PAIN

Une portion d'une céréale à grain entier; et au moins quatre tranches de pain (avec du beurre ou de la margarine fortifiée).

VIANDE et POISSON

Une portion de viande, de poisson, de volaille ou d'un succédané de la viande comme les haricots secs, les oeufs ou le fromage.
Employez du FOIE fréquemment, employez en plus, des OEUFS et du FROMAGE au moins trois fois par semaine chacun.

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Vient de paraître:

par R. X. O'MEYER

Valeur de la Croissance Relative en Hauteur des Procès Alvéolaires Chez l'Homme.

Un volume: 16 x 24; 96 pages; 17 figures, 500 francs.

Cette thèse a été soutenue par l'auteur devant l'Université d'Illinois pour l'obtention du titre de Master of Science in Orthodontia.

Ce travail reprend les diverses méthodes de recherches que nous pouvons envisager pour l'étude du tissu osseux: méthode clinique, histologique, teinture vivante, roentgénologie intra-orale, extra-orale, céphalométrique. C'est à cette dernière technique que l'auteur s'est ralié.

Une courte étude de la croissance en hauteur de la face permet de constater les divergences de vue qui existent à cet égard. Certains travaux de Brodie et Sarnat sont en contradiction avec ceux de Sicher et Weinman par exemple.

Le matériel utilisé au cours des recherches a consisté en des séries de téléradiographies que l'auteur a étudiées au Broadbent-Bolton Center à Cleveland, Ohio.

Trente sujets ont été sélectionnés, garçons

et filles dont l'âge variait entre 4 et 20 ans, les examens semestriels et annuels n'étant pas interrompus pendant cette longue période de croissance, ce qui était très important pour les recherches entreprises.

La méthode céphalométrique mise au point par Broadbent et Brodie est clairement expliquée. L'auteur a mis au point une technique personnelle permettant de rechercher sur les céphalogrammes la hauteur des procès alvéolaires avec le minimum de marge d'erreur.

Les mesures relevées ont révélé des différences entre les sexes, ainsi que des différences dans la localisation de la croissance.

Une trouvaille intéressante de l'auteur est la perte de hauteur du procès alvéolaire au cours du remplacement des dents temporaires par les permanentes, de même que la présence à un certain âge de deux procès alvéolaires, c'est le syndrome d'O'Meyer.

Cet ouvrage, illustré par 17 figures, est rédigé en français et en anglais.

Etude sur la prévention des malocclusions de la naissance à six ans

par JACQUES DIONNE, B.A., D.D.S., Montréal

Introduction

A son origine, l'orthodontie fut d'abord un art mécanique, surtout destiné à l'embellissement de l'esthétique que pouvait offenser les malpositions dentaires. En effet, c'est sous le règne de Louis XIV que vécut et professa Pierre Fauchard, l'initiateur incontesté de l'orthodontie. Le luxe de la noblesse, le souci de l'apparence et les connaissances limitées de la structure intime de la dent, faisaient de l'orthodontie un art de l'esthétique basée sur des moyens mécaniques et empiriques.

Cependant, le problème de l'occlusion normale et des malocclusions allait s'éclaircir. L'orthodontie, la périodontie, la pédodontie, de part et d'autre, étudiaient tantôt les processus de l'éruption des dents, les moyens d'aider à l'éruption normale dentaire en même temps que les moyens de conserver une telle dentition.

On classifia les malocclusions, on en détermina les causes, les moyens préventifs et enfin on établit les thérapeutiques appropriées.

On classifia en général l'étiologie des malocclusions en trois parties différentes d'après les différentes périodes de l'évolution et de la formation des dentures temporaire et permanente. Ces trois périodes sont:

1.—La période folliculaire:

Elle s'étend depuis la vie intra-utérine jusqu'à la deuxième année inclusivement.

2.—La période de la dentition temporaire:

Cette période va de la deuxième à la sixième année.

3.—La période de la dentition permanente:

Celle-ci va de la sixième à la douzième année.

Nous considérerons ici une partie de la première période, c'est-à-dire de la naissance à la deuxième année et de la deuxième période, ou celle de la dentition

temporaire. Cette période de la vie de l'enfant, c'est-à-dire de deux à six ans, peut à première vue paraître de moindre importance au point de vue dentaire, car dit-on, il ne s'agit que de la dentition temporaire. Elle est cependant fort importante, immédiatement d'abord et en prévision de la denture permanente. En effet, une poussée normale et correcte des premières dents et une bonne occlusion jusqu'à l'arrivée de la deuxième denture, garantiront à l'enfant une saine mastication, une meilleure prononciation, éviteront une perte prématurée des dents de lait, pourvoiront à l'éruption normale des dents permanentes et éviteront nombre de malocclusions possibles.

Voyons en premier lieu l'occlusion idéale normale de l'enfant lors de la première denture. L'occlusion idéale normale est la relation des dents quand les mâchoires sont fermées, la relation des points de contacts proximaux des dents et leurs positions axiales.

Chez l'enfant de trois ans, nous pouvons ainsi analyser l'occlusion normale: I.—*En projection horizontale:* nous observons que:

—Les surfaces linguales des incisives supérieures recouvrent le tiers incisif des surfaces labiales des incisives inférieures et la moitié de la surface mésio-buccale de la canine inférieure.

—La surface linguale de la canine supérieure recouvre la moitié de la surface disto-buccale de la canine inférieure et une partie de la surface mésio-buccale de la première molaire inférieure.

—La cuspide mésio-linguale de la première molaire supérieure fait son occlusion dans la fosse centrale de la première molaire inférieure.

—La cuspide disto-linguale de la première molaire supérieure fait son occlusion dans le sillon mésial de la deuxième molaire inférieure.

—La cuspide mésio-linguale de la deuxième molaire supérieure fait son occlu-

sion dans la fosse centrale de la deuxième molaire inférieure.

—La crête triangulaire de la cuspidé mésio-buccale de la première molaire supérieure fait son occlusion dans le sillon buccal de la première molaire inférieure.

—La crête triangulaire de la cuspidé mésio-buccale de la deuxième molaire supérieure fait son occlusion dans le sillon buccal de la deuxième molaire inférieure.

II—En projection latérale:

Il n'existe pas d'inclination axiale des dents. Les molaires et les incisives sont implantées perpendiculairement.

III—En projection frontale:

Une section frontale des arcades de la denture temporaire normale à l'âge de trois ans, nous montre que les molaires et les canines ne présentent aucune inclinaison latérale et que leurs axes sont parallèles.

À l'âge de quatre ans, les rapports occlusaux et mésiodistaux des dents restent les mêmes, mais il n'en n'est pas ainsi des arcades qui doivent s'allonger antérieurement et s'élargir latéralement afin de produire l'espace nécessaire à l'éruption des incisives permanentes qui seront beaucoup plus larges que les incisives temporaires.

Toute déviation à ce tableau de l'articulation normale de l'enfant peut et doit être considérée comme une malocclusion, plus ou moins grave, mais ayant une cause qu'il faut s'efforcer de déceler et d'enrayer le plus tôt possible. Prévenir les malocclusions, depuis la naissance jusqu'à la sixième année de l'enfant, c'est voir à la poussée normale des dents et surtout connaître les causes de malocclusions et les éviter autant qu'on le pourra. Durant cette période, il y aura tantôt des malocclusions causées par des troubles de l'éruption et tantôt des malocclusions provenant des causes étrangères à l'éruption dentaire et déviant les dents après leur poussée.

L'étiologie des malocclusions durant la période en cause renferme un grand nombre de facteurs qui peuvent être anatomiques, pathologiques, psychiques, mécaniques ou d'ordre hygiénique et nutritif.

1—Causes d'ordre anatomique:

1°—Macroglossie:

La macroglossie consiste en un développement exagéré de la musculature de la langue. Elle peut être bilatérale ou unilatérale. Cette difformité anatomique joue de bonne heure un rôle important dans la disposition des dents sur les arcades. La langue hypertrophiée produira une force exagérée à l'intérieur de la bouche et il en résultera une hypertrophie exagérée et correspondante de la mâchoire. Sur cette arcade démesurément développée les dents deviennent trop petites pour l'espace disponible, il se forme alors des espaces entre les dents. Une protrusion des quatre incisives se produit sous la pression de la langue. Le jeune patient, se sentant constamment gêné par sa grosse langue, garde la bouche ouverte et la langue vers l'avant; il en résulte une ouverture béante de la bouche, malocclusion néfaste et connue de tous.

2°—Microglossie:

D'autre part, une langue trop petite, "microglossie", produit une tonicité musculaire insuffisante pour le développement normal de l'arcade; le contraire alors survient et les dents, manquant d'espace, s'entrecroissent, s'entassent sur l'arcade entraînant une nouvelle malocclusion.

3°—Le bec-de-lièvre:

Le bec-de-lièvre à son origine dès le début de la vie intra-utérine. Cette anomalie anatomique influencera indirectement la direction des dents lors de leur éruption car elle modifie la musculature de la lèvre. Le bec-de-lièvre peut se réparer ou du moins s'améliorer par l'intervention de la chirurgie, mais il ne faut pas oublier qu'une telle intervention comporte le danger de déplacer les bourgeons dentaires et laisse un tissu cicatriciel de nature à entraîner plus tard une distribution très mauvaise des dents.

4°—Le prognatisme mandibulaire:

Le prognatisme mandibulaire peut être unilatéral ou bilatéral. C'est un développement exagéré de l'os maxillaire inférieur. Un état pareil rend impossible une bonne relation des arcades et des surfaces

occlusales des dents, surtout si les dimensions des dents augmentent aussi. Dans les cas excessifs de prognathisme, seule la chirurgie peut donner un résultat appréciable; car les traitements ordinaires d'orthodontie sont souvent suivis de récidive.

5°—*Frein anormal de la lèvre:*

a) *Lèvre supérieure:* le frein est gros, fibreux, allant s'attacher lingualement aux incisives centrales et cause ainsi une séparation de ces dents.

b) *Lèvre inférieure:* le frein empêche la langue de s'élever au-dessus des incisives et cause encore là une séparation des incisives inférieures.

Dans les cas de freins anormaux tant supérieurs qu'inférieurs, une intervention chirurgicale s'impose et réussit très bien dans le plus grand nombre des cas.

II—*Causes d'ordre pathologique de malocclusions:*

1°—*Les maladies à haute température:*

Ces maladies à haute température ne seront causes de malocclusions que si elles surviennent avant l'éruption des dents. Ces affections, telles la typhoïde, la fièvre scarlatine, la rougeole, la diphtérie auront d'abord l'effet de ralentir le développement et l'accroissement normal des os de la face. Or nous savons que le développement des os maxillaires se fait surtout dans le bas âge, et, si un retard a lieu durant cette période active de croissance, le temps perdu ne peut se reprendre et la croissance perdue est perdue pour toujours. Ainsi, les dents sortiront sur des maxillaires restreints et prendront toutes sortes de positions anormales. De plus, ces maladies à haute température peuvent détruire les tissus originaux de la dent et causer l'absence d'une ou plusieurs dents; ce qui entraînera de nouvelles malpositions dentaires.

Il va de soi que pour prévoir ces malocclusions il faut d'abord prévenir la maladie. Or nous savons qu'il existe des vaccins très puissants contre ces affections. Le rôle du dentiste sera donc ici un rôle d'éducation en mettant les parents au courant de l'incidence possible de ces maladies et en les engageant à

faire immuniser les enfants dès le très bas âge, avant l'éruption des dents.

2°—*Le rachitisme:*

Le rachitisme est une maladie caractéristique de l'enfance. Elle provient surtout de l'avitaminose D, d'une mauvaise nutrition ou d'un trouble métabolique du phosphore. Le rachitisme est une maladie qui s'attaque à la croissance osseuse en s'attaquant aux zones ostéogéniques actives. L'os demeure mou et tend à se déformer; la mâchoire supérieure est la plus affectée dans la plupart des cas. Elle est sous-développée à cause de la compression des muscles masticateurs. La mandibule en général reste large, surtout dans la région des molaires.

Le rachitisme peut amener:

- le sous-développement des os maxillaires.
- un retard dans l'éruption des dents temporaires.
- une perte prématurée des dents temporaires.
- une voûte palatine haute.
- une enflure des procès alvéolaires et des gencives.
- les procès alvéolaires sont tournés lingualement.
- la présence de végétations adénoïdes.

Encore ici la prévention de ces troubles est avant tout un problème éducationnel. Il conviendra d'avertir les parents que l'enfant a besoin d'une diète bien équilibrée pour une dentition solide. Il faudra prescrire une diète riche en calcium et en vitamine D, en même temps qu'un atmosphère sain et ensoleillé autour l'enfant.

3°—*Respiration buccale et végétations adénoïdes:*

La présence de végétations adénoïdes force l'enfant à respirer par la bouche, d'où la formation d'une voûte palatine haute et d'une occlusion béante. Il y a protusion de l'os maxillaire supérieur et une forte labioversion des incisives.

Le dentiste devra s'efforcer de diagnostiquer ces cas de végétations adénoïdes et de respiration buccale. En accord avec le médecin il faudra le plus tôt possible faire disparaître ces végétations adénoïdes et améliorer la respiration de l'enfant.

4°—*La syphilis:*

Quoique de moins en moins fréquente, la syphilis amènera la formation des dents de Hutchison, la perte prématurée des dents temporaires et une ouverture béante de la bouche. Elle peut aussi causer de nombreuses anomalies d'implantation et de nombre.

5°—*Ankylose temporo-maxillaire:*

Elle peut être unilatérale ou bilatérale, le plus souvent unilatérale et survient surtout à la suite d'un accident. L'ankylose bilatérale produit un arrêt du développement de la mandibule, d'où la rétrognathie mandibulaire. Si l'ankylose n'est qu'unilatérale, la ligne médiane sera déviée et la figure difformée.

L'ankylose est surtout grave lorsqu'elle survient durant le développement osseux et durant la poussée des dents. Elle peut entraîner surtout une perte prématurée des dents temporaires, la nonocclusion, une mauvaise distribution des dents sur les arcades et une labioversion des incisives.

Le plus tôt possible il faut voir à la cause de l'ankylose et voir à l'améliorer par tous les moyens, même par la chirurgie.

6°—*Troubles endocriniens:*—*Hyperfonctionnement de l'hypophyse:*

Cette maladie produit le gigantisme et l'acromégalie. Au point de vue dentaire, on peut observer:

- une séparation des incisives et canines.
- une éruption prématurée des dents temporaires.
- le prognathisme avec labioversion des dents.
- un développement exagéré de la mandibule.

—*Hypofonctionnement hypophysaire:*

Contrairement au premier cas, nous serons en présence:

- d'un sous-développement des os de la face, surtout des maxillaires, produisant une voûte palatine haute et étroite.
- les dents généralement de grosseur normale ne trouveront plus sur l'arcade l'espace nécessaire et des malocclusions s'ensuivent.

—*Hypothyroïdisme:*

Il en résulte le crétinisme caractérisé par un retard dans l'éruption des premières dents. Il existe généralement une macroglossie avec les malocclusions concurrentes. Cette maladie s'avère héréditaire et un soin doit être accordé aux histoires de cas qui en rapporteront.

70—*Anomalies dentaires:*

Les dents elles-mêmes, sans autre cause extérieure, peuvent produire des malocclusions de tout l'articulé. Il y aura d'abord l'absence d'une ou plusieurs dents ou anodontie; on comprend facilement que si une ou plusieurs dents manquent sur l'une ou l'autre des arcades, les contacts proximaux et occlusaux seront déséquilibrés, les dents inclineront mésialement et distalement, n'ayant pas le support naturel pour les garder en position.

De même, les anomalies de forme, surtout les dents trop petites ou trop grosses, causeront des espaces libres entre les dents ou celles-ci s'entrecroiseront sur la crête alvéolaire si l'espace est trop restreint.

111—*Causes d'ordre psychique des malocclusions:*

Par causes psychiques de malocclusions, nous entendons les habitudes vicieuses et les instincts anormaux qu'il faut savoir apercevoir chez le jeune enfant afin de l'en corriger aussitôt, sinon elles pourront durer pendant plusieurs années. L'instinct est quelque chose d'héréditaire, tandis que l'habitude est créée par un ensemble de circonstances joignant les réflexes aux fonctions vitales.

Le dentiste dont la pratique comprend une grande part de pédodontie se voit constamment en face de ces habitudes vicieuses, telles la succion de la tétine, la succion du pouce, la morsure du pouce ou de la lèvre et bien d'autres encore que l'enfant sait imaginer. Nous savons que vers l'âge de quatre ou cinq ans, ces habitudes causent des dommages considérables et parfois irréparables à l'appareil dentaire. La plupart de ces habitudes répondent à un besoin naturel de l'enfant en très bas âge, mais qu'il faut supprimer lorsqu'elles menacent de se

prolonger outre mesure et de devenir une seconde nature à l'âge de quatre ou cinq ans.

Ces mauvaises habitudes de l'enfant en plus de présenter un aspect fort disgracieux et anti-hygiénique, entraînent souvent des malformations des os de la joue, une ouverture béante de la bouche, une malformation de la voûte palatine, des labioversions, des linguversions, etc.

La prévention de ces habitudes vicieuses demandent beaucoup de circonspection, car les causes peuvent être multiples et passent souvent inaperçues au début; souvent, l'habitude est déjà impérieuse quand elle est découverte. Les méthodes employées pour faire cesser ces habitudes et instincts sont difficiles à appliquer et demandent une grande part de psychologie envers l'enfant. Chez le très jeune enfant, l'on peut employer des moyens radicaux, comme les mitaines ou robes de nuit qui couvriront les mains de celui-ci et l'empêcheront de les porter à sa bouche durant son sommeil. Chez l'enfant plus âgé, il faudra avoir recours à sa co-opération en rendant l'enfant conscient de sa mauvaise habitude et des inconvénients qu'il rencontrera s'il persiste dans cet état. Dans plusieurs cas, cependant, même cette méthode se montre inefficace et d'autres moyens doivent être essayés jusqu'à ce que l'une ou l'autre amène le succès.

Ces habitudes vicieuses dont trop d'enfants sont les victimes originent souvent d'une négligence de la part des parents qui agissent dans l'ignorance du danger qui menace les petites victimes. La prévention de ces états comporte une collaboration du dentiste, du psychiatre, du pédiatre qui informeront les parents de leur devoir et des moyens de prévenir ou de soulager ces mauvaises habitudes.

IV—Perte prématurée des dents temporaires:

La perte prématurée des dents temporaires peut être causée par une carie excessive ou par une rapide résorption des racines. Dans les cas de perte prématurée de ces dents, il faut voir au maintien de l'espace mésio-distal laissé par la dent absente. L'os maxillaire de l'enfant

est un os en croissance et mou dans lequel les dents restantes peuvent facilement se déplacer.

Ainsi dans l'échéance d'une perte des molaires temporaires la première molaire permanente ou dent de six ans se mésialera et l'espace réservé à la poussée des prémolaires sera partiellement rempli et ces dernières dents feront éruption en dehors de l'arcade ou resteront incluses. De plus, les dents temporaires antagonistes dévieront de leur position normale et la malocclusion ira s'aggravant. Si c'est la canine temporaire qui est perdue, toutes les dents de ce côté de l'arcade se mésialeront et fermeront l'espace réservé à la canine supérieure qui poussera en labioversion ou restera incluse.

Un effet néfaste de la perte prématurée des dents temporaires se fera aussi sentir sur le développement des os maxillaires. En effet, l'os qui manquera de stimuli ne pourra se développer normalement et quand les dents permanentes feront éruption l'espace sera trop restreint et il y aura des labioversions, linguversions des prémolaires, canines ou incisives.

La perte des incisives temporaires est particulièrement grave, car elle provoquera dans la structure antérieure des maxillaires des variations de forme et de dimensions et les incisives permanentes perceront en mauvaise position. Si l'on doit enlever une ou plusieurs incisives temporaires on doit aussitôt s'efforcer de remplir l'espace libre par une plaque ou par un pont temporaire en acrylique.

V—Causes hygiéniques de malocclusions:

L'hygiène que doit recevoir l'enfant en prévision de l'équilibre de son appareil dentaire est à la fois d'ordre général et d'ordre local.

L'hygiène générale de l'enfant consiste surtout à lui donner ce dont il a besoin pour le développement normal de ses os et de ses dents. L'allaitement artificiel est insuffisant en comparaison du lait maternel et est souvent cause d'anomalies dentaires et d'un développement restreint des os maxillaires. De plus, l'apport vitaminique en vitamines A, B, C et D est très important de même que l'ap-

port régulier de calcium et de phosphore et une certaine restriction des hydrates de carbone.

L'hygiène locale de la bouche de l'enfant réside à l'entretien régulier des dents afin d'éviter une carie prématurée et répandue qui résultera dans la perte prématurée des dents de lait. Il faudra enseigner aux parents et à l'enfant lui-même comment procéder au brossage des dents et insister pour qu'on le fasse après les repas et avant le coucher. Un tel brossage en plus de diminuer l'incidence des caries dentaires sera un stimulant pour les gencives qui resteront fermes et saines sous l'action de ces massages réguliers.

Education des parents et de l'enfant:

Le dentiste, en plus de connaître l'occlusion normale idéale de l'enfant et les causes possibles des malocclusions, doit le plus tôt possible prendre contact avec son jeune patient afin de prévenir mieux ces malocclusions.

Il pourra d'abord prendre un contact indirect avec l'enfant par l'intermédiaire des parents. En effet, peu d'occasions lui seront données de voir l'enfant en très bas âge; il pourra alors renseigner les parents en avertissant ceux-ci de ce que l'enfant a besoin en prévision de l'éruption normale de ses dents. Cette éducation comprendra en premier lieu un aspect nutritif et hygiénique afin de prévenir les cas de rachitisme, de croissance défectueuse des maxillaires ou une éruption tardive des dents. D'autre part il convient d'instruire les parents sur l'éventualité des maladies de l'enfance qui peuvent parfois laisser des dommages irréparables.

Aussitôt que l'enfant a toutes ses premières dents, il faut inviter les parents à le conduire chez le dentiste afin d'examiner l'état de sa dentition, ainsi on pourra apercevoir les déficiences à leur début et prendre les moyens de prévenir les troubles majeurs. Les visites régulières du jeune enfant chez le dentiste seront une garantie contre les dangers de mauvaise occlusion. Il sera, en effet, possible d'obturer les dents, d'arrêter les caries dentaires et de prévenir la perte prématurée des dents temporaires. D'autre

part, l'enfant s'habituerait peu à peu à l'atmosphère du bureau et son éducation dentaire sera meilleure et plus complète.

CONCLUSION

La prévention des malocclusions chez l'enfant depuis sa naissance jusqu'à l'âge de six ans alors que commencent à percer les dents permanentes doit être l'une des principales préoccupations de la pédodontie. Le maintien d'une occlusion normale assurera le fonctionnement de l'appareil dentaire et garantira une dentition permanente sans défaut.

Dès la naissance, il faut penser à assurer à l'enfant une bonne dentition. Dans ce but, on aura constamment en vue ce qui peut empêcher les dents d'avoir une éruption normale et une formation complète des os maxillaires. Prévoir les malocclusions, c'est voir à la formation d'une bonne dentition temporaire en écartant les causes de malocclusions et en favorisant les facteurs normaux de développement normal. Une grande part revient à l'éducation des parents dans cette lutte contre ces causes de déformations dentaires. Les parents avertis assureront une hygiène, une nutrition meilleure à l'enfant et une surveillance plus suivie et en rapportant au médecin ou au dentiste ce qui leur paraîtra anormal dans le développement de la première dentition de l'enfant. D'autre part, le dentiste doit s'efforcer de contacter le plus tôt possible le jeune patient afin de maintenir sainement les dents de celui-ci par les obturations, les conseils aux parents ou les appareils d'orthodontie. L'état intégral de la première denture en plus de jouer son rôle important dans la physiologie de l'enfant, préviendra surtout les troubles de malocclusions dans la deuxième denture, troubles qui seront beaucoup plus difficiles et longs à corriger ou qui seront dans certains cas irréparables.

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Histoire de pêche*

Dans "Le vieil homme et la mer", Ernest Hemingway nous raconte, dans son style bien à lui, l'aventure d'un vieux pêcheur aux prises avec un immense poisson. Après des jours et des nuits de lutte, l'homme de la mer réussit à touer sa capture gigantesque jusqu'au port; mais il ne reste que la carcasse: la proie qu'il avait réussi à mâter a été dévorée par des requins sur le chemin du retour.

Il y a plusieurs parallèles entre ce pêcheur courageux et un étudiant qui décroche son parchemin en chirurgie dentaire. Il y a ce combat épique pour le triomphe; le succès couronne les efforts. Mais à l'encontre du vieux pêcheur, il ne faudrait pas que le jeune diplômé laisse se détériorer sa "prise", qu'il a capturée grâce à ses sacrifices; il ne doit pas laisser les "requins" de la profession s'approcher de sa barque: mercantilisme, satisfaction béate de soi, accrocs aux règlements régissant l'exercice, moisissement d'une science apprise à l'Université, égoïsme isolant, laissant aux autres la tâche d'améliorer notre "métier" au point de vue scientifique, social, relations extérieures.

Le jeune diplômé aura fort à faire pour garder intacte sa "capture". Des problèmes nouveaux, que n'ont pas connus ses aînés, se présenteront à lui; il devra solutionner la question de l'empiètement progressif de l'Etat dans ses affaires; l'exigence plus intelligente du public pour des traitements adéquats; l'aspect nouveau conféré à l'exercice dentaire par l'intrusion des fluorures dans l'alimentation des populations; l'apparition de nouvelles techniques opératoires et de nouvelles pathologies apportées par un monde sans cesse en mouvement; enfin, sa fonction de citoyen se compliquera de plus en plus en face des problèmes internationaux, de la répartition des valeurs humaines et de cette opposition d'idéologies agitées fébrilement par la puissance effroyable de l'énergie nucléaire. Le vieux pêcheur d'Hemingway ne disposait pas des "appareillages" indispensables au triomphe intégral et surtout il n'avait pas la foi!

Le diplômé "1954" s'est préparé, il possède les éléments nécessaires pour amener au quai sa proie intacte; il a confiance en sa bonne étoile, qui, somme toute, est son Créateur.

GERARD DE MONTIGNY.

* Article paru dans "L'Explorateur," organe de la Conférence Bourdon des étudiants en chirurgie dentaire de l'Université de Montréal, à l'occasion du départ des nouveaux diplômés, en mai 1955.

POUR OU CONTRE LE FLUOR

Pour ou contre la fluoruration de l'eau? Telle est la question qui se posait à la municipalité de Saskatoon, commune du Canada. Une violente propagande avait eu lieu, dans les deux sens. Les dentistes, les médecins, étaient pour. Un premier vote au Conseil municipal donna 6 voix pour et 3 contre. Les adversaires du projet ne se tinrent pas pour battus et demandèrent un référendum dans la population. Malgré un vote négatif, à la suite d'une nouvelle et plus violente campagne, dans la presse et la radio, le référendum fut décidé. Résultat: 9.700 voix pour, 9.200 contre! Il semble que les voix pour provenaient plus particulièrement des quartiers aisés et des jeunes. Les gens âgés et ceux ayant un revenu moyen relativement bas auraient voté contre.

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An evaluation of dentifrices in the prevention of dental caries and gingivitis

by JOHN B. MACDONALD and GORDON NIKIFORUK*

PART II. Chlorophyllin, Fluorides, "Anti-Enzymes"

CHLOROPHYLLIN

Interest in metallic chlorophyllins as preventive agents in dental disease stems from reports by Rapp (1949) and Rapp and Olen (1949) in which it was claimed that use of a dentifrice containing chlorophyllins lowered lactobacillus counts, relieved non-specific gingivitis, and effectively combatted mouth odours. The resultant unjustified advertising focused the eyes of the public and of the profession on the so called "green wonder drug".

Subsequent reports from various laboratories yielded conflicting results, the reasons for which were revealed at least in part by Hein (1954). The production in quantity of chlorophyllins is a difficult process and samples used to date have been frequently not chemically pure. The

samples have thus varied in chemical, physical and biological properties (Hein, 1954). That such materials have yielded conflicting results should not be surprising.

Rapp's report of significant decrease in lactobacillus counts of human subjects as a result of using a chlorophyllin dentifrice over a 24 week period conflicts with those of Hein (1952) Costich and Hein (1952) and Kutscher and Chilton (1953), all of whom found no significant reduction. Bibby and Nevin (1951) and McBride (1952) demonstrated bactericidal effects of chlorophyllin compounds on pure cultures of lactobacilli. Hein and Shafer (1949) showed inhibition of acid production in saliva-carbohydrate mixtures in the presence of chlorophyllins. Koser and Hodges (1953) found sodium copper chlorophyllin to be bacteriostatic but variable in potency from one lot to another.

Studies of caries in laboratory animals

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have yielded conflicting results. Sodium copper chlorophyllin was found by Shaw (1950) to be ineffective against caries in albino and cotton rats. Studies by Hein and Shafer (1949) suggest reduction in caries-scores of hamsters resulting from the use of copper chlorophyllin. These latter workers interpreted their results as indicating that the effect was more significant in the female than in the male. Repetition and extension of this work seems indicated to establish the validity of this interpretation. As noted by Hein and Shafer there was wide variation in the amount of caries occurring in different animals within the same group. This peculiarity of hamster caries was also noted by Chernauek and Mitchell (1951) who drew attention to the resultant difficulty of interpreting findings. Hein (1953) presented results indicating reductions in hamster caries by the use of copper sulphate and suggested that free copper in the chlorophyllin products might account for the caries reductions which he had previously reported.

Costich and Hein (1952) in studying the relation of the use of a chlorophyllin dentifrice to gingivitis found no improvement in the gingival condition in 61 young women during a 5 month period. On the other hand, using the PMA method, McDonnell and Domalakes (1952) reported a decrease in gingivitis in 60 days in a group of boys using a chlorophyllin dentifrice. The decrease, compared to a control group, was no longer demonstrable after 9 months' use of the test dentifrice. Repetition by Hein (1953) of his earlier dentifrice study using 160 young adults and employing the PMA method again failed to disclose a beneficial effect.

In view of the divergence in the results reported from the use of chlorophyllin dentifrices and more particularly in view of the fact that no studies in respect to dental caries have been reported dealing with human subjects, there is at present no justification for claims of a therapeutic value in the use of such a dentifrice.

FLUORIDES IN DENTIFRICE AND MOUTHWASHES

Bibby (1948) studied the effectiveness of a liquid dentifrice containing fluoride in 72 youngsters 5 to 16 years of age over a period of two years. A transient reduction of the lactobacillus count was noted but there was no reduction of dental caries. In two student groups, one using a paste and the other using a liquid dentifrice, both containing fluoride, no reduction of dental caries was noted.

Incorporation of sodium fluoride (1 per cent) into a prophylactic pumice-hydrogen peroxide mixture was attempted by Bibby (1948). In a group of children aged 6 to 12 years the first group (95) had one side of their mouth cleaned twice and in the other group (47) the one side was cleaned three times. Apparent reductions in caries increments of 25 and 43 per cent respectively were noted at the end of one year. The study was expanded to include 250 patients and the treatment assigned to dental hygienists. After one year no reduction in dental caries was noted.

McClendon (1946) reported a significant reduction in new cavities in 77 adult students who brushed their teeth with a dentifrice containing a natural and synthetic fluoroapatite.

Shaver and Smith (1946) reported that a dentifrice containing 0.1 per cent sodium fluoride, used twice daily under supervision, "can produce a reduction in counts of acidogenic organisms in the saliva of humans".

A dentifrice containing stannous fluoride (concentration of tin 3,200 p.p.m.; concentration of fluorine 1,000 p.p.m.) was tested for caries reduction by Muhler et al (1954; 1955) on 423, 6 to 15-year-old children. After supervised use of the dentifrice for 12 months a 51 per cent reduction in DMF teeth and 49 per cent in total DMF surfaces was noted. The proximal surfaces showed an 84 per cent decrement in caries while the occlusal surfaces had a 30 per cent decrement. The

differences were significant except for the reduction in occlusal surface caries.

"ANTI-ENZYME" DENTIFRICES

Recently a series of compounds designated as "anti-enzyme" have been introduced into dentifrices for the prevention of dental caries. The term is unfortunate in that it suggests introduction of a new principle in the prevention of dental caries, viz., the inhibition of bacterial enzymes involved in the caries process. Actually, any compound which interferes with bacterial metabolism is in a general sense an "anti-enzyme". The new principle involved relates to the prolonged retention of enzyme inhibitors contained in the dentifrice on surfaces of teeth by the dental plaque.

A dental plaque consists primarily of living and dead organisms, denatured and native salivary proteins (Bibby and Van Huysen, 1933; Hemmens et al, 1941; Campaign and Fosdick, 1938). Its physico-chemical characteristics are largely attributable to its high protein content. Fosdick (1949) suggested that the plaque may be utilized in the prevention of caries by serving as an agent for the retention of enzyme inhibitors on the tooth surface.

Fosdick et al (1953) performed screening tests on 381 compounds to determine those most effective in inhibiting acid formation in saliva-enamel-sugar mixtures and those most readily retained by the dental plaque. Of ten compounds that met the criteria most effectively three were tested in vivo in dentifrices or mouthwashes. It was found that in the case of three compounds, viz., penicillin, sodium N-lauroyl sarcosinate and sodium dehydroacetate, after seven days use drops in pH below 5.5 at the tooth surfaces were prevented. According to this test, drops in pH below 5.5 were still prevented after nine months' use of either sodium N-lauroyl sarcosinate or sodium dehydroacetate.

The selection of these agents as therapeutic agents in dentifrices was based on an arbitrary laboratory screening test.

The validity of this measurement as a method of evaluating therapeutic agents was studied by Forscher and Hess (1954). The results were summarized as follows: "The actual pH measurement of a single plaque sample was reliable . . . that plaque samples from different regions of the mouth differed in pH . . . that a dentifrice containing 2 per cent sodium N-lauroyl sarcosinate did not prevent acid formation in the dental plaque. It appears that the use of the pH of plaque after a sugar rinse as a measure of the effectiveness of a therapeutic agent against dental caries may be misleading."

Brudevold and Little (1954) measured the fall in pH of plaque material from proximal surfaces following a sugar rinse in subjects who were instructed to brush their teeth and rinse with a solution of sodium-N-lauroyl sarcoside in the morning upon rising and before going to bed at night for seven days. Similar tests were performed after the subjects had been using toothpaste containing sodium lauroyl sarcoside and dehydroacetate for one week. Under the above test conditions neither of these procedures prevented a drop in the pH of dental plaques. In another experiment the inhibitory effect of single mouth rinses of lauroyl sarcoside was studied. Measurement of pH of plaque material by an intra oral technique showed that this compound exerted an inhibitory effect on the fall in pH after one-half hour.

A preliminary clinical study on the effectiveness of sodium-N-lauroyl sarcosinate involving 2265, 19 to 35 year old individuals was reported by Fosdick (1953). A group that brushed their teeth according to their personal choice and a group that brushed their teeth under supervision using a placebo dentifrice comprised the controls. The experimental group were divided into one section that brushed their teeth twice a day and those that brushed their teeth after meal times, both groups using the test dentifrice. Thus the two groups were not comparable in respect to toothbrushing procedures. At the end of one year a comparison be-

tween the test and control groups (combined) indicated that the increment of new carious lesions were 0.29 and 0.67 respectively, or a 57 per cent reduction compared to the controls.

A class of compounds capable of inhibiting certain bacterial enzymes and which are retained on surfaces of teeth by the dental plaque have been introduced for purposes of preventing dental caries. The appraisal of the clinical effectiveness of the "anti-enzyme" compounds must await further and more exhaustive evaluation from several research laboratories.

DISCUSSION

The cardinal objective of studies reported in this review are essentially the same, i.e. to assess the effectiveness of test compounds in dentifrices for the prevention of dental caries or gingivitis. However, the results of the experiments, including those designed to test identical compounds, are often contradictory or difficult to assess. Differences are to be expected in view of the myriads of variables that influence the caries process, and hence the experimental results. However, contradictory results are more often explainable on the basis of experimental designs which fall short of the requirements needed for these studies.

Several studies cited in this review preclude failure because of the experimental design. The use of patients in a private office, inadequate controls (one control group had a caries experience equal to one-half that of the experimental group at the beginning of the study) and short testing periods (six months in one study) illustrate the need for a more rigid design in some studies.

Successful clinical evaluation of the effectiveness of a caries preventive measure depends upon the suitability of the experimental design and the application of appropriate statistical procedures. The most important single element of the experimental design is the randomization of all variables except the one being tested. The most valid method of dividing a

number of people into a control and a test group is to allot the individuals by some chance procedure. The need for homogeneity as far as possible in respect to age, sex, race, supervision and living conditions is obvious.

The length of the experiment is critical in caries studies. Clinical studies of caries usually include measurement of the incidence of the lesions for a specific time interval. There is a time interval separating the occurrence of a microscopic defect and the point at which it becomes a clinically recognizable lesion. Short experiments based on a clinical examination often measure the increase in size of a cavity rather than the increment in new carious lesions. The need for experiments lasting several years and for combining radiographic and clinical examination in order to accurately evaluate increments in proximal and occlusal cavities becomes apparent.

Another feature of the studies in this field relates to the manipulation in the formula of the test compounds. This is best illustrated with reference to ammonium and urea dentifrices. The studies in connection with these compounds employ percentage concentrations of urea and dibasic ammonium phosphate whose proportions vary as follows: 5:2, 22.5:5, 13:3 and 12:1. While the concentration of test compounds is of recognized importance, there is no justification for purely empirical manipulations of concentration values.

A considerable confusion arises from the over rigid interpretation of observations such as the percentage difference in caries increments between control and the experimental groups. Many apparent discrepancies would disappear if the different workers were to present their results in terms of a confidence range rather than a single figure. Instances in which small differences can be shown to be significant providing large enough samples are used in the experiment need have no practical value. One must weigh carefully the practical value of experimental results which have been produced

under severely restricted circumstances.

The importance of corroboration is sometimes under-estimated. Because of the nature of significance tests it is to be expected that from time to time honest research workers will publish erroneous conclusions resulting from the 1 to 20 or 1 to 100 odds on which the significance test is based. It is not desirable to demand that this be eliminated by using higher confidence limits because this would result in an over-abundance of false negatives. It is corroboration of an experiment by another independent worker which renders the result dependable because the probability of the joint chance occurrence of the independent experiments is the product of the two separate probabilities. Thus the probability of two independent workers concluding that an experimental result is significant or very significant would be as low as $1/4000$ to $1/10,000$.

Dental caries may be divided into two basic categories in respect to quantitative distribution (Grainger and Reid, 1954 and Reid and Grainger, 1955). Counts of carious smooth tooth surfaces per child can be described by the negative binomial probability distribution. This suggests that the number of tooth surfaces affected is determined by chance, though the probability of decay occurring varies from individual to individual. These facts further suggest that the etiological factors associated with caries of smooth surfaces may be related to environmental phenomena. The rates of decay for interproximal surfaces are high and tend to be similar for adjacent surfaces, reflecting the local conditions for these spaces. Counts of carious pitted or fissured surfaces per child exhibit relatively less variation from person to person than do counts of smooth surface caries. Moreover, the proportions of pitted surfaces erupted and carious are much more constant with age than the proportions of smooth surfaces erupted and decayed. This suggests that factors determining the occurrence of caries on pitted surfaces are more closely associated with the pre-

eruptive (morphological or chemical) attributes of the tooth itself.

This concept supports a hypothesis that "therapeutic" dentifrices by their influence on the oral environment might be expected to reduce smooth surface cavities, with less effect on pitted caries. Experimental support for this hypothesis is to be found in studies by Muhler (1954) indicating that reduction in dental caries as a result of fluoride in water and fluoride dentifrices primarily affect the smooth surfaces. It is suggested from study of mechanical contact that it would be difficult to introduce solutions into contact with areas of pits and grooves. (Besic, 1950). A better understanding of the chemical and morphological growth and development of teeth may be necessary in order to intercept caries of pitted surfaces. Future studies will determine the validity of these concepts.

Some reference should be made in this discussion relative to the unjustified advertising based on studies in this field. Too often in vitro results or preliminary reports published by reputable persons have been abused by some advertisers through juggling of statistics. The infallible seal of "it has been scientifically proved" is frequently applied to unscientific reports. The consumer's mind is thus skillfully manipulated.

There is evidence that this problem is receiving needed attention. This question was brought to the attention of general publishing and advertising fraternities in an editorial by Larrabee (1954). "Leaders in advertising should see that scientific techniques are not so abused by a few unscrupulous advertisers that their great potential benefits are denied those who can use them wisely and soundly."

SUMMARY

1. No simple relationship exists between oral hygiene and dental caries. The composition of sediment adhering to teeth appears to be more important than the amount of sediment. Good evidence exists of a correlation between caries and

the number of lactobacilli recoverable from the oral cavity but there is inadequate evidence that the numbers can be significantly reduced by brushing. Evidence exists of a significant reduction in incidence of human caries as a result of brushing immediately after eating.

2. Toothbrushing, probably because of the cleansing effect, beneficially affects periodontitis and gingivitis.

3. The hypothesis that salivary ammonia-urea levels are associated with caries immunity are based on tenuous evidence. Clinical evidence suggests that dentifrices containing urea (2 per cent) and dibasic ammonium phosphate (5 per cent) have no therapeutic value in the prevention of dental caries. Studies involving dentifrices containing higher concentrations of urea (13-22.5 per cent) and dibasic ammonium phosphate (3-5 per cent) are not conclusive.

4. In view of the conflicting clinical reports on the caries-preventive value of penicillin in a dentifrice and the need for further study in respect to the possibilities of hypersensitization or harmful disturbances in the normal flora, the general use of a penicillin dentifrice is not justified.

5. No studies have been reported dealing with the effect of chlorophyllin dentifrices on dental caries in humans.

6. A dentifrice containing stannous fluoride has been reported to reduce dental caries significantly. This study awaits confirmation from other laboratories.

7. A class of compounds (anti-enzymes) capable of inhibiting certain bacterial enzymes and which are retained on surfaces of teeth by the dental plaque have been introduced for purposes of preventing dental caries. The available data do not justify the conclusion that these compounds are effective in the prevention of dental caries. The appraisal of the clinical effectiveness of the "anti-enzyme" compounds must await further and more exhaustive evaluation from several research laboratories.

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Any procedure, whether it be orthodontic, periodontic, prosthodontic, surgical or operative, that has for its end the simultaneous contact of all teeth in centric relation and which in function distributes the forces in such a manner that they are in no way physiologically harmful to the periodontium, has achieved its goal.

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Periodontal disease among adults

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INTRODUCTION

Knowledge of the prevalence* and the relative frequency of the various manifestations of periodontal disease at different ages is essential for the development of an efficient programme of teaching and research in dentistry. A number of surveys have been conducted in the past to determine the prevalence of periodontal disease^{4, 7, 11, 23}. However, differences in the examination methods employed for the assessment of the disease have led to wide variation in the findings. The purpose of this study was to determine the frequency of certain evidences of periodontal disease and their inter-relations as revealed by a thorough clinical examination of an adult population.

Because there has been no agreement on the system of examination, it is most difficult to determine whether all the past reports from various investigators indicate a real variation in the frequency of the disease between and within various population groups. It is most likely that real differences do exist on geographical and racial bases,^{10, 27}

The reports in the literature may be divided into attempted descriptions of the prevalence of gingivitis and of periodontal disease.

Prevalence of Gingivitis

A concise picture of the studies of the prevalence of gingivitis is given in Table I.

The reported prevalence of gingivitis even for similar age groups differs considerably among the various populations. The major criticisms of these studies stem from the lack of precise definition of the criteria, on which diagnoses were based and the need for conventional statistical methods. Arbitrary classification such as mild or severe, are of small value without a clear definition of the meaning of these terms.

Prevalence of Periodontal Disease

In many of the surveys of periodontal disease, the prevalence was based on radiographic evidence, while others depended entirely on clinical examination. Black⁶ in 1918 reported an increase with age in the percentage of people exhibiting alveolar bone loss and stated that the number of areas involved per person also increased with age. Brekhus⁸ in 1929 made a record of "the teeth extracted because of the investing tissues". He claimed that the percentage of teeth lost in this way increased with age and that it was greater among males than females. Miller and Seidler²¹ in 1940 reported the need for periodontal treatment in 62 per cent of the males and 56 per cent of the females among 1,003 patients examined between the ages of 11 to 60. Day et al^{10, 11, 14} conducted a survey in India, involving 538 subjects aged 9 to 60. As diagnosed by bone loss revealed in radio-

*In this paper, the term prevalence is employed to indicate "the number of cases of this disease at a given time or existing through a time interval". The term incidence is considered to mean "the rate of occurrence of new cases of the disease".

TABLE I
PREVALENCE OF GINGIVAL DISEASE

COUNTRY	AUTHOR	YEAR	NO. EXAMINED	AGE GROUP	% WITH GINGIVITIS	CRITERIA FOR DIAGNOSIS
UNITED STATES	McCall ²²	1933	4,600	1 - 14	98%	Termed affected after inspection & instrumentation.
	Masener ²⁰ et al	1936	1,000,000	6 - 14	3.5 to 8.6%	Gums arbitrarily called normal or diseased.
	Brucker ³	1943	1,492	4 - 16	8.8%	Arbitrarily called affected slight and severe after inspection.
	Day ⁹	1948	234	6 - 18	73%	Judged affected if swelling, redness, bleeding, no stippling, etc. present.
	Schour ²⁴ & Massler	1948	781	20 - 34	57.6%	P.M.A. (detailed examination).
	Day ¹²	1954	1,300	13 - 65	80%	Described above.
ENGLAND	Ainsworth ¹ & Young	1925	4,063	2 - 15	60%	Judged affected if hypermia & swelling present (slight medium and severe).
	Cook & ⁸ Campbell	1942	2,924	CHILDREN	2.2%	Judged affected if redness & swelling present.
	King ¹⁵	1945	1 313 11 74	12 - 18 21 - 30	88% 84%	Judged affected if one or more of several conditions were present (color, swelling, hemorrhage).

graphs 66.8 per cent of the individuals were said to have periodontal disease. In the 13 to 14 age group only 8.3 per cent had bone loss but this increased to 100 per cent by 17 years of age. Out of the entire age group surveyed, 66 per cent had horizontal and 34 per cent vertical type of bone loss. The preliminary reports of the latest studies by Day et al ¹² of 1300 subjects in Boston aged 13 to 65 are again based on clinical and radiographic evidence. The percentage of individuals having bone loss involving one or more teeth ranged from four per cent at 13 to 15 years group to almost 100 per cent from 35 years upwards. Absence of gingivitis, in the presence of bone loss was rarely encountered. McIntosh¹⁷ reported that 74.5 per cent of 398 Toronto children between the ages of six to 11

years had one or more pockets measuring three millimeters or more in depth.

PROCEDURE OF STUDY

Source of New Data

The examination was conducted among Ontario Civil Servants in Toronto during the summer of 1954. The Civil Servants constitute a low to middle income group and hence there is perhaps less range in their pay rates than in the population as a whole. About 60 to 70 per cent of the potential 5,000 individuals between 15 to 54 years of age were notified of the survey and of those notified about 30 per cent (670) volunteered and were examined. Completely edentulous persons did not come for examination, and the inability to assess the number of edentulous individuals, among the entire group has limited the usefulness of the data for

TABLE I (cont'd)
PREVALENCE OF GINGIVAL DISEASE

COUNTRY	AUTHOR	YEAR	NO. EXAMINED	AGE GROUP	% WITH GINGIVITIS	CRITERIA FOR DIAGNOSIS
<u>ISLE OF LEWIS</u>	King ¹⁶	1940	1,280	6 - 15	90%	Arbitrarily called slight, medium, severe.
<u>INDIA</u>	Day & ¹² Shourie	1947	1,054	9 - 17 (boys)	99.4%	Gingivitis as described (Slight to severe).
	Day & ¹⁰ Shourie	1947	179	9 - 17 (girls)	73.7%	Gingivitis as described (Slight to severe).
	Mehta ¹⁹ et al	1953	2,219	18 - 55	100%	Judged affected if one or more of several conditions were present (color, swelling, hemorrhage).
<u>ITALY</u>	Schour ²⁵ & Massler	1947	3,905	6 - 10 51 - 60	40% 98%	P.M.A. system (quantitative) in anterior region only.
<u>NEW ZEALAND</u>	Saunders ²⁶ & Taylor	1948	36	4 - 14	94%	Judged affected if one or more of several detailed conditions were present.
<u>PUERTO RICO</u>	Day ¹⁰ et al	1948	1,648	6 - 18	60 - 79%	As described above.
<u>VIRGIN ISLAND</u>	Day & ¹³ Shourie	1950	823	6 - 18	57%	As described above.
<u>CANADA</u>	Brown ² et al	1954	Brantford 1,742 Sarnia 1,345 Stratford 1,068	6 - 14	58.4% 63.1% 79.2%	Detailed P.M.A.

Source: Expansion of basic table by Day, Schour and Massler.

calculating the disease prevalence. However, it may be assumed that as age increases, the prevalence of periodontal disease is, if anything, underestimated.

Using mouth mirrors, Clev-dent No. 2 explorers, Williams calibrated periodontal probes and cotton pliers, the clinical examination of the mouth was systematically performed in a series of circuits¹⁸. The items given detailed study in this paper were defined as follows:

I Oral Hygiene

1. Good oral hygiene indicated that the teeth were free from observable plaques, stains, materia alba, food debris and calculus.

2. Fair oral hygiene was recorded when the teeth showed some observable

traces of plaques, materia alba, staining and slight calculus deposits.

3. Poor oral hygiene meant that the mouth was very unclean having continuous plaques, materia alba, staining, with abundant food debris and calculus deposits.

II Periodontal Pockets

The depth was measured vertically from the gingival margin by the use of a Williams periodontal probe which was placed in the gingival crevice and carefully drawn in contact with the base from distal towards mesial on each tooth. The location and depth of pockets measuring 3 or more millimeters in depth were recorded with no distinction being made between gingival pockets and true periodontal pockets.

TABLE II
DISTRIBUTION OF INDIVIDUALS DIAGNOSED AS CLINICALLY NORMAL & EXHIBITING
VARIOUS TYPES OF PERIODONTAL DISEASE SIMPLEX: COMPLEX: NECROTIC

Age in Years	Clinically Diagnosed Normal				Having Various Types of Periodontal Disease										Total Examined			
	Male		Female		SIMPLEX		COMPLEX				NECROTIC				Male	Female		
	No.		No.		Male		Female		Male		Female							
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%						
15 to 19	2	5.7	18	22.7	31	88.5	55	69.6	2	5.7	1	1.2	0	-	5	6.3	35	79
20 to 24	2	4.2	3	3.8	43	91.4	69	88.4	1	2.1	5	6.4	1	2.1	1	1.2	47	78
25 to 29	2	3.2	4	6.7	55	90.1	52	88.1	4	6.6	3	5.08	0	-	0	-	61	59
30 to 34	1	2.3	1	2.8	33	76.7	27	77.1	9	20.9	7	20.0	0	-	0	-	43	35
35 to 39	1	2.2	2	6.2	32	71.7	25	78.1	12	26.6	5	15.6	0	-	0	-	45	32
40 to 44	2	5.4	4	13.7	26	70.2	20	68.9	9	24.3	5	17.2	0	-	0	-	37	29
45 to 49	0	-	1	3.1	13	76.4	27	84.3	4	23.5	4	12.5	0	-	0	-	17	32
50 to 54	0	-	1	4.1	8	47.5	18	75.0	9	52.9	5	20.9	0	-	0	-	17	24
TOTALS	10	-	34	-	241	-	293	-	50	-	35	-	1	-	6	-	302	368

III Clinical Diagnosis

The presence of one or more periodontal pockets was considered to be the determining factor for the diagnosis of periodontal disease, just as a single cavity requires a diagnosis of dental caries. The distribution and nature of the pockets, the intensity of gingival inflammation, and the oral hygiene condition provided the basis of differentiation of the following types of periodontal disease. Whenever there was a combination of different types in the same mouth, the form predominantly present was given as the diagnosis.

1. Periodontitis simplex was diagnosed, when there was present one or more broad shallow pockets usually found in interdental spaces. Pockets were usually of similar depth. Poor oral hygiene and general inflammation of the gums was confirmatory but not diagnostic without the presence of the pockets.

2. Necrotic periodontitis was said to be characterized by the absence of clini-

cally detectable inflammation in a mouth which was usually clean and well cared for but had one or more irregularly distributed deep pockets.

3. Periodontitis complex was distinguished from necrotic periodontitis by the presence of some clinical inflammation in addition to the symptoms of the necrotic type.

FINDINGS

Specific Clinical Types of Periodontal Disease:

Periodontitis simplex was found to be the most common clinical form of the disease. For the combined ages (Table II) 79.4 per cent of males and 79.6 per cent of females were affected. The percentage of affected males increased with age, $P < .02$, but for females the age differences were just bordering on significance, $P.05 < .1$.

Periodontitis complex was diagnosed for 16.3 per cent of the males and only 9.4 per cent of the females. This differ-

TABLE III
AVERAGE NUMBER OF POCKETS PER INDIVIDUAL
ACCORDING TO AGE AND SEX

Age in Years	Number of People Examined		Average Number of Pockets Per Person Per (5 Year Groups)		Average Number of Pockets Per Person Per (10 Year Groups)	
	Male	Female	Male	Female	Male	Female
15 to 19	35	79	13.11	8.81	12.08 $\pm$ 1.004*	9.40 $\pm$.634
20 to 24	47	78	10.95	9.78		
25 to 29	61	59	13.18	10.52	15.90 $\pm$ 1.74	10.27 $\pm$.829
30 to 34	43	35	19.76	9.97		
35 to 39	45	32	22.24	14.31	21.48 $\pm$ 2.05	13.34 $\pm$ 1.38
40 to 44	37	29	20.56	12.2		
45 to 49	17	32	20.88	12.4	22.02 $\pm$ 3.17	13.32 $\pm$ 1.53
50 to 54	17	24	23.17	14.5		

* Standard error.

ence is not statistically significant, $P < .01$, although it is not incompatible with a concept of males being slightly more susceptible. Some strength is given to this idea in that the male percentages were higher in seven out of the eight age groups studied. The age increase in the number of individuals diagnosed as having complex periodontitis is highly significant in both sexes, $P < .01$.

The necrotic type of periodontal disease was diagnosed for only seven persons in the entire 760 examined. These were in the 15 to 24 age group, and thus it might be considered a transitory stage.

Prevalence of Periodontal Pockets

The number of pockets increased with age for both sexes, $P < .01$. After the age of 35 years the males had significantly more pockets per person than the females, $P < .01$, see Table III. The average number of teeth lost was similar for each sex and increased significantly with age

$P < .01$, Table IV. Table V shows that when the average number of pockets were related to the average number of teeth present at these ages, the sex and age difference became even more significant.*

Oral Hygiene Status

The oral hygiene condition (Table VI) was found to be poorer in males than females, $P < .01$, and regressed with age in both sexes, $P < .01$. The proportion of individuals, (all ages pooled) having poor oral hygiene was greater among individuals having complex periodontitis, $P < .01$. This relationship was mainly contributed by the females, since upon separate analysis the male difference did not reach significance.

*For this testing between sexes a critical ratio was derived in terms of a standard error equal to the square root of the sum of the individuals squared standard errors. This was because the variances of these ratios could not be pooled in the usual manner for a "t" test. At each of the four age groups, the ratio was greater than 2.

TABLE IV

AVERAGE NUMBER OF TEETH PRESENT PER MOUTH ACCORDING TO AGE AND SEX

Age in Years	Average Number of Teeth Present Per Person		Total Number of People Examined	
	Male	Female	Male	Female
15 to 19	27.4 $\pm$.37*	26.6 $\pm$ 1.25	35	79
20 to 24	25.7 $\pm$.88	26.8 $\pm$ 1.22	47	78
25 to 29	24.9 $\pm$.69	24.7 $\pm$.64	61	59
30 to 34	25.1 $\pm$.72	24.4 $\pm$.66	43	35
35 to 39	24.9 $\pm$.69	22.9 $\pm$ 1.48	45	32
40 to 44	22.3 $\pm$ 1.20	22.2 $\pm$ 1.33	37	29
45 to 49	22.2 $\pm$ 5.25	24.1 $\pm$.86	17	32
50 to 54	17.6 $\pm$ 1.09	21.1 $\pm$ 1.76	17	24

* Standard error.

TABLE V

RATIO OF AVERAGE NUMBER OF POCKETS PER TOOTH
BY AGE GROUPS AND SEX

Age in Years	Average Number of Pockets Per Tooth		Number Examined	
	Male	Female	Male	Female
15 to 24	.45 $\pm$.039*	.35 $\pm$.028	82	157
25 to 34	.63 $\pm$.071	.41 $\pm$.035	104	94
35 to 44	.91 $\pm$.094	.59 $\pm$.071	82	61
45 to 54	1.10 $\pm$.21	.58 $\pm$.075	34	56

* Standard Error of Ratio $\sqrt{m_1^2 \cdot s_{m_2}^2 + m_2^2 \cdot s_{m_1}^2} / m_2^4$ where m_1 is the average pocket score per person and m_2 is the average number of teeth present per person.

TABLE VI
RELATION OF ORAL HYGIENE TO AGE AND SEX

Age in Years	ORAL HYGIENE												Total Examined	
	GOOD				FAIR				POOR				Male	Female
	Male		Female		Male		Female		Male		Female			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
15 to 19	2	5.7	7	8.8	19	54.2	59	74.6	14	40.0	13	16.4	35	79
20 to 24	4	8.5	5	6.4	19	40.4	60	76.9	24	51.0	13	16.6	47	78
25 to 29	1	1.6	2	3.3	23	37.7	49	82.3	37	60.6	8	13.3	61	59
30 to 34	1	2.3	3	8.5	15	34.8	22	62.8	27	63.4	10	28.5	43	35
35 to 39	0	-	1	3.1	5	11.1	19	59.3	40	88.8	12	37.5	45	32
40 to 44	0	-	1	3.7	11	29.7	14	48.2	26	70.2	14	48.2	37	29
45 to 49	0	-	0	-	3	17.6	14	43.7	14	82.3	13	56.2	17	32
50 to 54	0	-	0	-	3	17.6	11	45.8	14	82.3	13	54.1	17	24
Totals	8	-	19	-	98	-	248	-	196	-	101	-	302	368

DISCUSSION

In terms of the general prevalence of periodontal disease almost all persons have one or more symptoms, but the diagnosis of specific type depends upon having a certain combination of symptoms. It will be important in the follow-up of this study to examine the relative importance of specific symptoms to the diagnosis of the disease. To illustrate, it has been seen that the diagnosis of simplex is loosely related to poor oral hygiene, although this was stipulated in the diagnosis. Probably this was because most of the males (80 per cent) had poor oral hygiene in the older ages. Hence this plan of study should be of value to eliminate the subjective ideas of the disease conditions, and to emphasize the symptoms which were actually more closely related to the diagnosed disease.

The sex difference, which has been noted in the early age group may be due to some pre-disposing factors, which affect males at an earlier age than females. One may conjecture that males

have more lesions, because they have poorer oral hygiene, but we have not completely tested this relationship. There is, of course, a parallel relation with time between poor oral hygiene and the type of periodontal disease; but this is not a sound basis for stating that a true relationship exists. Other factors such as dietary, hormone, function, may be the explanation of the sex difference and need to be studied eventually. The general increase with age for both sexes in simplex and complex as well as for specific symptoms such as number of pockets, etc., indicate that there is probably no specific resistance built up by individuals to the disease in an immunological sense. Rather it may be that the predisposition to the disease is correlated to the cumulative stress or gradual lowering of general resistance of the body, associated with chronic malnutrition, hormonal changes, and general senility. It may be related to untoward local factors such as overstress and loss of contact due to tooth loss, or irritation from prosthetic appliances, broken or decayed teeth, etc. All

these theories need to be tested by direct experiment.

Not only were there more individuals with specific symptoms as age increased, but it is clear that the severity of the symptoms also increased. This was brought out by the fact that the average number of pockets increased with age, even though there were fewer teeth in the older ages, which could have pockets.

Analogous to the M component in the D.M.F. rates used in studying dental caries, no rational periodontal rating for missing teeth has yet been brought forward. This handicap may have to be overcome by creating an index based on the periodontal experience of teeth that are not lost too early in life, with the assumption that the disease in the mouth as a whole would be correlated to the condition of the sample regions. Such an index might be forthcoming after the examination of the inter-relation between the prevalence of lesions in different areas of the mouth.

ABSTRACT

The 670 individuals examined in this study were voluntarily drawn from nearly five thousand civil servants of the Ontario Provincial Government. The ages ranged from 15 to 54; 302 were males, and 368 females. A thorough clinical examination of the mouth was performed for each individual and the diagnosis made on the basis of these findings. The percentage of individuals having at least one symptom of periodontal disease was very high for all ages. A significant sex difference seemed to infer the earlier involvement of males by periodontitis complex. Out of the different forms of periodontal disease for all ages periodontitis simplex was found to be the most common form and affected sexes very similarly. After the age of 35 years, the average number of pockets per person, and the pockets per tooth present were significantly higher in males than females. The oral hygiene condition was found to be poorer in males than females and regressed with age in both sexes.

CONCLUSION

1. The prevalence and severity of periodontal disease apparently increases markedly with age in both sexes.
2. There is a tendency for males to be affected by various forms of periodontal disease earlier in life than females.
3. Periodontitis simplex is clearly the more common form of clinically diagnosed disease at all ages in both sexes.
4. At specific age levels more males than females were classified as having poor oral hygiene.

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Torus palatinus

by HAMILTON E. SIMMONS, D.M.D., F.I.C.D.,
Vancouver, B.C.

The Torus Palatinus is a bony elevation along the median palatine suture of the hard palate and, when present, presents an oval shaped, sometimes nodular, hard lump, or series of lumps, in this region. It is of considerable interest to dentists and oral surgeons, because it frequently interferes with the successful wearing of a dental appliance. A great deal has been written about it, and some interesting theories have been discarded as a broader understanding of its character and etiology has been gained.

Fox (1814) first mentioned the torus palatinus as an exostosis in the mid-palate region, and Kupffer (1880) is credited with first having named it. Chassinac (1852) regarded the condition as an early sign of the tertiary manifestation of syphilis, but he was opposed in his theory by Cullerier and Ricord (1858). Didary and Richet (1877) considered the torus to be a natural structure found in non-luetic, normal individuals. Dorrance (1929), after exhaustive study, failed to find any relation to Rachitis. Thoma (1937) hypothecated the belief that the larger forms were true exostoses of the palatal processes.

Dr. Ju-Kang Woo, Department of Anatomy, Washington School of Medicine, St. Louis, Missouri, made a study of 2246 adult skulls in five different racial groups, and it is to his fine paper on this subject that I owe much of the material gathered here. Dr. Woo could find no evidence that the torus palatinus was related to syphilis, rachitis, or to any other pathological condition. He found that it behaved wholly as normal bone, never ulcerated, never broke down. It seemed to be a normal anatomical variation, occurring in both youth and age,

in both sexes, and found, though not with uniform frequency, in all races.

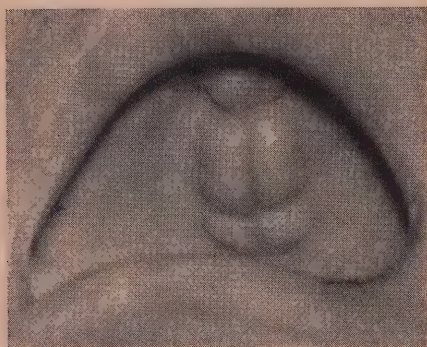
The form and size of the torus palatinus varies greatly. It may extend anteriorly to the incisive foramen and in rare cases, even on both sides of it, and posteriorly to the posterior border of the palatine bones. In general, it tapers gradually anteriorly and is most commonly found in the middle of the palate. In width, the torus can sometimes occupy as much as $\frac{2}{3}$ of the palatal surface. The amount of projection downward also exhibits great variation. Indeed, it can be found on one side of the palatal suture only, or one side may have less elevation than the other. In the case here illustrated, the rounded bosses are separated almost equally by a deep median groove.

Some authors have observed the torus palatinus in the newborn, and in as many as eighteen percent of children; sex appears to make little or no difference in the incidence.

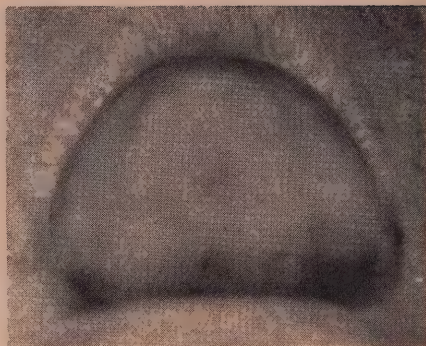
CAUSATION:

Nooton (1918) considered the condition to be a form of hyperostosis which is the result of environmental adaption, dependent upon the excessive development of the masticatory mechanism, a factor which produces pressure toward the median palatine region.

Ju-Kang Woo suggests that this theory is not practical, because of the structure of the bony lamellae which run in the opposite direction to the supposed pressure suggested by Nooton. Koch (1917, 1949), and Townsley (1948), postulated that the configuration of the internal structure of a bone is correlated with the direction of mechanical and muscular force acting upon it. Therefore, if the palatine torus were due to vertical



PRE-OPERATIVE



POST-OPERATIVE

*Photograph by Mr. K. Buckley,
Shaughnessy Hospital Photographic Unit.*

forces of mastication, one would expect to find the lamellae running from medial to lateral instead of from anterior to posterior, as they do.

Korner (1924) and Dorrance (1929) put forth the hereditary theory.

Ju-Kang Woo states in his conclusion, "Torus Palatinus seems to be a specifically hominid character determined by hereditary constitution."

STRUCTURE:

The Torus Palatinus is composed of a layer of compact bone with intervening cancellous bone superimposed on the cortical bone of the structure to which it is attached.

CASE HISTORY: A White Male—64 years of age.

The patient first noticed two hard lumps on the hard palate about 1921. These have not changed to any extent since that time.

The palate has been x-rayed several times, showing no foreign bodies present, and simply the tori in the palate, with no history of any injury in this region. He has had his remaining teeth extracted and the gums have healed normally. The patient now requires a dental prosthesis, but it is impossible to make an upper denture successfully, with the large prominent bony lumps present. It there-

fore becomes necessary to remove them surgically.

Admitted to Hospital 24-6-54.

OPERATION RECORD:

Anaesthetic — Intratracheal.

The throat was packed off with vaselined gauze.

An incision was made, beginning at a point medial to the posterior palatine foramen on the right side near the junction of the soft and hard palates, extending forward and around the torus to the midline. This was repeated on the left side until the incisions met just posterior to the incisive foramen. The soft tissue covering the hard palate was then reflected back. The exposed torus was then removed by means of an osteotome held at about a 45° angle from the palate. The flap was massaged back into place and sutured.

28-6-54:

Patient's condition satisfactory. Palate healing well. Discharged.

PATHOLOGY REPORT:

Clinical: bone from palate. Torus Palatinus.

Gross specimen consists of three portions of pink bone, the largest measuring 1.5 cms in diameter.

ABSTRACTS

Bone Changes associated with tooth movement

by ELSDON STOREY, M.D.Sc.

The Australian Journal of Dentistry, August, 1955.

There are variations in the rate of tooth movement when a constant force is applied to a tooth which are related to the anatomical arrangement of the surrounding tissues and the length of time for which a force is applied to a tooth.

Tooth movement in the rabbit and rat is associated with a lateral movement of the premaxillary bones. There is a compensatory growth of bone which tends to maintain the original width of the suture. Tooth movement in these animals is therefore not a true indication of the rate of resorption of bone on the pressure side, as it is on the guinea pig of this age group.

In the guinea pig increase of force

changes the shape of the curve: tooth movement plotted against time. This is because the application of a heavy force is associated with an increase in the area of bone which must be removed by a process of "undermining resorption" before tooth movement can progress.

Any sudden increase in the rate of tooth movement is associated with destructive changes in the periodontal membrane.

A light force applied to a tooth will eventually move the tooth through a thin plate of bone as new bone formation occurs at a slower rate than bone resorption.

The behaviour and orientation of connective tissues under tension or pressure are histologically characteristic.

Using this experimental method it is possible to follow accurately resorption and deposition of bone.

Refrigeration anaesthesia in cavity preparation

by ROBERT J. EUSTICE, D.M.D., Biloxi, Miss.

The Journal of the American Dental Association, September, 1955.

The purpose of this abstract is to present a preliminary report describing the use of a refrigerant type of anaesthetic in cavity preparations which eliminates most of the need for a local injection.

The Hibernator machine used in this study was developed and manufactured in

France; its trial use at the U.S. Naval Dental School was made possible through the courtesy of Dr. Pierre D. Bernard of Paris, France.

The machine consists of a mobile cabinet similar in size to an Airdent unit; it houses a refrigerant unit and a heating element. The machine has an arm which supports an air gun. The air gun directs a concentrated stream of air through a glass extension tube to the tooth which is undergoing cavity preparation.

Positioned on the air gun are a tem-

perature indicator, a glass extension tube, a heating control button, and an air control lever.

The machine is employed to cool the tooth to approximately 1 degree C. (33.8 degrees F.) and maintain that temperature; at the same time it cools the dental bur during cavity preparation. This progressive and moderate lowering of the temperature of living tissues has aptly been termed "hibernation" by the French.

It is known that much pain results when air at a temperature of 60 degrees to 65 degrees F. is blown against hypersensitive dentine. To prevent this, air at about 98.6 degrees F. (body temperature) is blown on the tooth to be prepared after the air gun is in position, and the temperature of the air stream is slowly decreased automatically, yet imperceptibly, without stimulating neurosensitivity and congestive reflexes. At 59 degrees F. the hypoaesthesia phase is entered. The

temperature continues to decrease, and below 50 degrees F. the anaesthesia phase is reached. Anaesthesia is sometimes sufficient at 41 degrees F., and almost always at 33.8 degrees F. (1 degree C.), for painless cavity preparation. The temperature of the air stream is stabilized automatically at 33.8 degrees F. (1 degree C.) by a heating element housed in the cabinet. The length of time required to drop the air stream from 98.6 degrees F. (body temperature) to 33.8 degrees F. (1 degree C.) is approximately two minutes. The stream of air is maintained at 33.8 degrees F. throughout the operation. The dental bur, as well as the tooth, is in the direct line of the refrigerated air stream.

The reports of 100 patients, together with the classifications of teeth prepared and groupings of times the machine was in operation, are given in the table.

TABLE—REPORTS OF 100 PATIENTS

Classification of tooth	No. operations	Length in min. of machine operation			Pain sensations				Patients' Reactions	
		1-6	7-12	13-18	None	Slight	Mod.	Severe	Favorable	Not Favorable
Molars.....	29	9	17	3	18	5	3	3	23	6
Bicuspid.....	27	6	12	9	22	5	0	0	27	0
Incisors.....	44	26	17	1	36	8	0	0	44	0
Total	100				76	18	3	3	94	6

Ninety-four per cent of the patients in whom refrigerant anaesthesia was used reported favorable reaction with little or no pain during cavity preparation.

Six per cent indicated a pain reaction and reported unfavorable reaction.

Those tested who had little or no pain developed a favorable attitude and vice versa.

In the 6 per cent of the patients who experienced a pain reaction, the cavity preparations were in the following teeth: three in third molars and one in a second molar in the maxilla; two in the third molar in the mandible.

The total number of molars treated

was 29. Unrecorded observations indicated that in patients with wide mouth openings it was much easier to place equipment so that the air stream would be in a correct position to accomplish anaesthesia. Conversely, it was noted that small mouths interfered tremendously with accessibility, especially for upper third molars.

Unfavorable reactions to refrigerant anaesthesia were not due to the technique of anaesthesia, but to inadequate accessibility.

Further investigation is recommended so that a new technique can be developed for treating posterior teeth.

Newer Concepts in Periodontal Therapy

by BERNARD S. CHAIKIN, D.M.D., Boston, Mass.

The New York Journal of Dentistry, October, 1955.

The aim in any periodontal treatment is not only to eliminate the pathological processes but also to restore a form to the gingivae which will lend itself to more physiological function, and one which will require a minimum amount of care to maintain health. This means that periodontal pockets must be eliminated; mobility of teeth should be lessened by occlusal adjustment and if necessary, splints may be utilized. In order to assist in achieving and maintaining these results, a method of oral physiotherapy must be taught to the patient with the understanding that this regime should be carried out daily for the rest of the patient's life.

When shallow to moderately deep periodontal pockets of the supra-bony type are treated by subgingival curettage, it usually results in a shrinkage of the gingivae to a level which will have a minimal sulcus depth. In the curettage technique for this type of pocket, the calculus deposits must be scaled from the tooth surface, leaving it smooth and highly polished. The soft tissue side of the pocket must be curetted to remove the ulcerated crevicular epithelium, a layer of underlying inflammatory connective tissue and one to two mm. of crestal gingiva.

In the treatment of the intra-bony pocket by curettage, not only is the tooth scaled, the soft tissue side of the pocket curetted, and some of the crestal gingiva removed, but the epithelial attachment with some of the underlying connective tissue is also removed. A blood clot is maintained in the operated area by layers of adhesive tinfoil placed interproximally and held securely in position by a surgical pack. The pack is necessary to induce connective tissue reattachment and alveolar bone regeneration. This type of healing occurs best in narrow, infra-bony pockets with lesser results occurring in the wider type.

Deep interproximal craters, wherein the alveolar bone has resorbed, but with little or no crevicular depth on the labial or lingual surfaces, heal best by subgingival curettage. Regeneration to a higher crownward level is more likely to occur with this form of therapy than any other.

Shallow interproximal craters, however, respond better and more quickly by a gingival resection technique. In this operation, the base of the crater then becomes the crest of the papilla. The gingivae around crowded teeth frequently present this sign. If the gingival contour is carried to the same height as its neighbours, the exposed root at this level frequently will be on the same plane as the approximating teeth, thus making it easier to maintain health.

The Use of Zinc Chloride and Potassium Ferrocyanide in Desensitizing Cavities

by HAROLD J. KRISTAL, D.D.S., Richmond.

The Journal of the California State Dental Association and the Nevada State Dental Society, May-June, 1955.

One of the most disturbing problems in dental practice has been postoperative sensitivity to hot and cold fluids. This

invariably seemed to follow deep cavity preparation. If the pain persisted, it would be necessary to replace the original filling with a sedative filling. The following technique is advocated as a means of overcoming the problem:

1. The tooth is isolated with a rubber dam. This is necessary to prevent soft tissue damage since the solutions are caustic.

2. Dip a pledget of cotton held by cotton pliers into a 50 per cent solution of zinc chloride. Add one drop of 1 per cent Nacconol (wetting agent) to the pledget of cotton and moisten the prepared cavity with the pledget of cotton.

3. Allow the tooth to dry for two minutes. Dip a pledget of cotton held by cotton pliers into a 25 per cent solution of potassium ferrocyanide and add one drop of 1 per cent Nacconol to pledget of cotton.

4. Moisten the cavity with this solution and allow it to dry for two minutes.

5. Dry the cavity with air.

6. A precipitate forms when the final solution dries, which is carefully scraped away from the margins.

7. Fill with amalgam.

Using this technique, eighty-two teeth were treated, of which seventy-three had no after pain reaction whatsoever to hot or cold. Three had slight sensitivity to hot or cold for less than twenty-four hours, and six had reaction to hot or cold for less than three days. When it is remembered that the teeth treated had extremely deep carious areas, the results prove very gratifying.

This technique offers these important advantages:

It is a time saver since many cavities may be desensitized at once.

It allows greater bulk to the amalgam restoration, making a stronger filling.

Desensitization is much more pronounced than that obtained by former techniques.

The use of increased speeds for rotating instruments

by ROBERT E. DOERR, B.S., D.D.S., M.S.

The Journal of the Michigan State Dental Association, September, 1955.

There are several basic considerations which should be kept in mind when higher speeds for rotary instruments are used.

At increased speeds there is a noticeable drop in the torque of the dental motor. However, it should not be a troublesome factor as only ounces, and not pounds, of pressure are used on the cutting instrument. Operating with a maximum of $\frac{1}{2}$ pound of pressure results in less patient apprehension and less fatigue to the dentist.

Each bur or diamond should be operated at its optimum speed and should be used to its fullest extent before it is removed from the handpiece or contra-angle. Perhaps a table will be developed at some future date which will show the correct speed and pressure for each type of rotary instrument.

Control of the cutting operation will be more complete if the instruments are used with a dragging or pulling motion instead of a pushing one.

To overcome undesirable heating of the contra-angle, use a separate contra-angle for each rotary instrument. The necessary contra-angles are set up prior to the appointment and are then changed during the operation whenever a different bur or diamond is required.

The use of increased speeds enables the dentist to develop a systematic approach to various types of cavity preparations. Fewer rotary instruments are needed, because each one operates more efficiently and completes the job for which it was designed. The dentist does not have to work to make an instrument cut effectively.

The use of surgical saliva ejectors is particularly indicated when operating with increased speeds of rotation. These ejectors not only recover the coolant and saliva adequately, but they have the added advantages of controlling the patient's tongue and reflecting light into the operating field.

It should be emphasized that increased speeds are not indicated for all operative procedures. There are areas in many preparations which should be completed with a slowly or moderately revolving instrument.

EDITORIAL

The profession and the dental technician

It has long been recognized that in dentistry auxiliary personnel are necessary for the provision of maximum service to patients. Demands for dental care far exceed the total time available by all dentists, even if they confined themselves entirely to chair-side procedures. Many time-consuming technical methods are performed to much greater advantage by personnel working under the direction of the profession.

Technicians have a great responsibility to the dental profession to carry out those indicated procedures to the best of their ability, in order that patients may be the recipients of the finest standards of dental care.

Dentists, however, have definite obligations toward their technicians. Most of the problems which arise in respect to the illegal practice of dentistry could be almost eliminated if each dentist undertook to act in complete fairness with the technicians who perform his laboratory procedures.

It is most significant in Canada that there are a dedicated body of technicians who are striving to act in a completely ethical way with the dental profession. They have assiduously supported measures whereby they engage in only those procedures which have been specifically ordered by the dentist. There are other technicians, however, who take great advantage of the apparent disinterest which many dentists demonstrate toward adherence to the legal requirements. This

lack of concern by dentists in respect to these regulations is all the more confusing when it is realized that any infractions invariably adversely affect the profession and the ethical technicians. The only ones who stand to gain are those who are not above engaging in the illegal practice of dentistry.

A qualified dental technician is a highly-trained and skillful artisan. His field relates specifically to those extra-oral procedures to which the average dentist has little time to direct his attention. For these laboratory services, the technician is entitled to a reasonable fee. It is a sad commentary, however, when some dentists are concerned only with the individual who will perform a service at the lowest charge. If one stops to analyze that concept it becomes apparent that by such actions he literally drives the ethical technician into illegal practice. Most technicians make an honest effort to be fair and it follows then that their charges must be based on the cost of operating their laboratories and on the provision of a reasonable standard of living. If a dental practitioner demands services at a fee not consistent with those considerations then the livelihood of the technician suffers with the possible result of an attempt on his part to augment his income in some other way. This "other way" is often an engagement in illegal practice. Let us be fair with our technicians and be willing to pay an account which is reasonable and honest.

Dentists often give little or no thought to the problems of a technician. While they themselves, may have no available appointments for persons seeking attention, many dentists often expect immediate service from their laboratories little thinking that the technicians, too, may well be inundated with incompleted work. No one can control emergencies, but care and foresight in planning prosthetic treatment service will avoid much of the hurry and pressure resulting from last-minute instructions.

It is a dentist's legal obligation to write a prescription for each technical service desired. Failure to do so places the laboratory in an untenable position and opens the door once more to repeated infractions of the regulations.

The sending of patients directly to the laboratory is another matter which has serious consequences. If a patient has been directed to a laboratory for

selection of shade, try-in, insertion or for a repaired denture, there is a great tendency for the patient to desire to return to the laboratory for any further attention. Patients should be cared for entirely by the dentists. The laboratory is no place to carry on the practice of dentistry.

It is common knowledge as well that some dentists continue to support technicians who have been convicted in court of the illegal practice of dentistry. As a rule these individuals tend to cut their charges and augment their income by continued illegal practice. It is difficult to understand dentists supporting an individual who by his actions, undermines the welfare of the patient, the profession, and the ethical technician.

Illegal practice in many parts of Canada is a serious problem. The members of the profession, by strict adherence to the regulations now in effect, could do much to eliminate the causative factors of this condition.

The anaesthesia questionnaire

Each member of the Canadian Dental Profession will have, at this date, received or will obtain within the next few days, a questionnaire on the subject of anaesthesia. It is an important questionnaire and one which should not be set aside. The information accruing from such a study will have a profound effect upon the future of dental anaesthesia in Canada.

In 1950, the Council on Dental Education of the Canadian Dental Association first took this subject under advisement and heard two reports at later dates from interested members. In June of 1954 the Council adopted a resolution which in effect sets up a committee to study anaesthesia in relationship to undergraduate teaching.

The sub-committee was established with a representative from each of the dental schools and a representative from each province on a geographical basis. The committee, as a preliminary consideration, is attempting to establish the profession's position in respect to anaesthesia from the various provincial acts. In conjunction with this report, it is necessary to know what the dentists of Canada are doing, what their problems are and what opinions and suggestions they have for improving the practice of anaesthesia.

It is essential for a complete consideration of the entire situation to receive an almost 100 per cent reply to the questionnaire. The co-operation of each Canadian dentist is thereby earnestly solicited.

Book Reviews

Oral and Dental Diagnosis. By Kurt H. Thoma, D.M.D., F.D.S.R.C.S. Eng., Hon.F.D.S.R.C.S. Edin.; Hamilton B. G. Robinson, D.D.S., M.S. Published by W. B. Saunders Company. Pages: 449. Price: \$10.50.

The recently published Fourth Edition has been considerably revised and amplified. Numerous illustrations, photographic and radiographic, serve to endow the text with a clinic-like clarity. A casual perusal of the various chapter headings provides a foretaste of the orderly chronological make-up of this most exhaustive diagnostic treatise.

This single volume of modest proportions is a most complete text for the student as well as a valuable reference for the Dentist, whether General Practitioner or one limiting practice to any of the various specialties.

All etiological factors have been investigated from biological variants, through family history to the clinical picture which is presented graphically as well as visually. The student is not left here. Logical and concise courses of treatment planning are rationally presented, and suggested therapy is explained from a purely physical, and when indicated, a psychosomatic standpoint. A well modulated note of caution is sounded regarding empirical treatment and too great a reliance upon the use of the so-called wonder drugs such as the Antibiotics. The authors have included a brief discussion of the sensitivity of organisms to Antibiotics as well as notes on their toxic reactions.

Professional conduct and the interrelationship of the Internist, the Physician and the Dentist are discussed to a considerable degree in the early chapters. The authors never seem to tire of stressing the responsibilities of the various Health services and Agencies with the sole purpose of promoting and maintaining the health of that very important individual, the patient.

A. Borden Haverstock.

Advances in Experimental Caries Research.

By Reidar F. Sognnaes. 1st edition. Published by The American Association for the Advancement of Science, 1515 Massachusetts Avenue N.W., Washington 5, D.C. Pages: 246. Price: \$5.75.

This volume is devoted specifically to research on the experimental production and prevention of dental caries in laboratory animals. Contributions from a total of twenty investigators, representing dentistry and related basic sciences, ensure comprehensive coverage of this aspect of caries research.

It is not possible to exactly duplicate the factors which produce caries in humans by the use of laboratory animals. However, some fundamental information has been obtained by the use of this experimental tool. Evidence for participation of bacteria and food substrate in the oral cavity in the production of dental caries has stemmed from laboratory animal research. Evaluation of various caries preventive agents in laboratory animals has led to useful information which could only be obtained by long and expensive experiments on humans.

This volume covers a wide variety of subjects relative to caries in the experimental animal. The laboratory species most suited for experimental caries research are discussed in detail. The sections dealing with genetic and environmental (dietary, salivary, endocrine) factors which influence caries are organized in a coherent sequence with a minimum of duplication. Further research dealing with the mechanism of action of genetic factors and the chemical composition of the tooth should provide interesting and useful information in this field.

This book is a convenient and complete compilation of the numerous studies in the field of experimental dental caries. It is, therefore, a welcome addition to the libraries of dental research laboratories and schools of dentistry.

Gordon Nikiforuk.

The Effect of Sugar Supplements on Dental Caries in Children. By J. D. King, May Mellanby, H. H. Stones & H. N. Green. Her Majesty's Stationery Office, Atlantic House, Holborn Viaduct, London E.C.1, England. Pages: 55. Price: 4 shillings.

This publication is a special report of the United Kingdom Medical Research Council dealing with the possible effects on caries experience of modifying the carbohydrate content of a diet. The broad outline of the study comprised: 1. Observations of the dental caries experience of three groups of children in residential homes over a period of 1 year on their ordinary diet; 2. Study of the effect of adding sugar (refined and unrefined) to diets of some of the children for periods of 1, 1½ and 2 years. The results of the investigation indicate that "relatively great differences in the total sugar content of the diets of children in institutions had no significant effect on the initiation or spread of dental caries in periods of 1 to 2 years".

This clinical study was, generally speaking, carefully planned and well executed. However, in the experimental design inadequate reference was made to procedures that would ensure randomization of the sample studied. No radiographic examinations were made in the clinical examinations. This is important, particularly for evaluation of proximal carious lesions.

The diet of the control groups contained significant amounts of sugar (12½ to 23 ounces per child per week) prior to and during the investigation. The probability exists that this concentration of sugar had a near maximal effect on the initiation of new caries. Hence, an experiment cannot adequately test the effect of sugar on

dental caries by adding a supplement of sugar to a diet containing significant amounts of this compound.

Unwarranted interpretations have been put upon the above study by some groups. To quote the authors, "This investigation does not prove that the sugar content of the diet, however distributed and however eaten, never affects the teeth [but] it certainly points to the practical conclusion that, provided a child is fed on a diet as good as that of the average children's residential institution in England, a substantial increase in the amount of sugar in the diet will not affect the child's liability to dental caries within a period of at least 2 years."

Gordon Nikiforuk.

An Atlas of Dental Histology. By E. B. Manley, M.Sc., B.D.S., F.D.S., R.C.S. (Eng.); E. B. Brain, B.Sc., F.I.B.P., F.R.P.S.; E. A. Marsland, Ph.D., B.D.S., L.D.S., R.C.S. (Eng.). Published by The Ryerson Press. Pages: 91. Second Edition. Price: \$5.50.

There will be a warm welcome for books of this type. The 134 photomicrographs which are clear and easily interpreted, make this atlas a valuable reference book. The text is comprehensive and succinct.

The section on the preparation of the dental tissues for microscopic examination will be of interest to the student, the technician and research worker.

This atlas is recommended for the library of the undergraduate and the graduate in dentistry; in fact, for all those interested in microscopical anatomy of the tooth mechanism.

Winnifred Riddle.

Correspondence

To the Editor,

Journal of Canadian Dental Association.

Sir,—I desire to express my most cordial thanks to you for the generous manner in which you drew attention, in the September issue of the Journal, to my recent Exhibition of Early Dentistry in the Hunterian Museum, Glasgow University as well as to my booklet, *Dentistry as Practised, 1800-1921*.

I should, however, like to clarify one point! Copies of this booklet (2/6) can be purchased

from the Benevolent Fund of the British Dental Association, 13 Hill Street, London, W. 1, not from me. I feel I ought to mention that two prominent London dentists shared with me the entire cost of production of 1,000 copies, thereby ensuring that the Benevolent Fund would benefit to the fullest extent.

J. Menzies Campbell,
D.D.S., F.D.S., F.I.C.D., F.R.S.E.

70 Great George Street,
Glasgow, W. 2.

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions

PAMPHLETS

DUNNING, J. M.: Dental Service at the Saint Louis Labor Health Institute, 1955. 10 pp.

MEDICAL RESEARCH COUNCIL, LONDON: Special Report Series No. 288. The effect of sugar supplements on dental caries in children by J. D. King, M. Mellanby, H. H. Stones, and H. N. Green. 1955.

U.S. PUBLIC HEALTH SERVICE: Comprehensive dental care in a group practice by the Group Health Association, Inc., and the Division of Dental Research. 1954. 48 pp. illus.

BOOKS

ALEXANDER, H. L.: Reactions with drug therapy. 1955. 301 pp. illus.

JAMES, M. D.: The Dentist. 1955. 32 pp. illus.

MANLEY, E. B., BRAIN, E. B., and MARSLAND, E. R.: An atlas of dental histology. 1955. 91 pp. illus.

MANN, W. R., and EASLICK, K. A.: Practice administration for the dentist. 1955. 386 pp. illus.

MITCHELL, R.: Medicine in Manitoba; the story of its beginnings. 1954. 141 pp. illus.

PAFFENBARGER, G. C.: American Dental Association Specifications for Dental Materials. 1955. 76 pp.

THOMA, K. H., and ROBINSON, H. B. C.: Oral and dental diagnosis with suggestions for treatment. 1955. 449 pp. illus.

The Association

Train Transportation for Banff Meeting from Eastern Points

Many members have requested that arrangements be made to assure reservation on "The Canadian". In order to be assured of reservations for "The Canadian" train to attend the Annual Meeting at Banff *it will be necessary to make application early*. We have been promised every consideration provided early application is made. Special arrangements for members in Eastern Canada have been made with the C.P.R. officials. Applications should be addressed as follows:—

For Toronto area:

Mr. Fred Patterson,
C.P.R. Building, Room 101,
King and Yonge Streets,
Toronto, Ontario

For Montreal area and East:

Mr. J. M. Cowan,
C.P.R. City Office,
Montreal, P.Q.

or

Mr. H. Sequin,
C.P.R. City Office,
Montreal, P.Q.

For Ottawa area:

Mr. J. B. McNee,
C.P.R. City Office,
Ottawa, Ontario

or

Through your local railway agent.

Meeting dates are as follows:

Board of Governors—30th May-2nd June, 1956

Convention—3rd June-6th June, 1956

For those going by train, attending the Board of Governors' Meeting, it will be necessary to leave Montreal, Toronto or Ottawa on Sunday afternoon May 27th, arriving at Banff Tuesday afternoon.

For those going by train, attending the Convention, it will be necessary to leave Montreal, Toronto or Ottawa on Thursday May 31st to arrive at Banff on Saturday afternoon June 2nd. (Or leave Friday for arrival Sunday p.m.).

All accommodation on "The Canadian" is reserved. No cars can be added to the train. Applications will be allotted in order received by the Passenger Agents. It is not necessary that you pay for your transportation now but it is *essential that you make your reservation at an early date.*

New Dental School at Dalhousie

The following editorial appeared in the Halifax Mail Star on Friday, September 23rd last:

"MEETING DENTAL NEEDS"

"The new dental school to be built by Dalhousie University with substantial help from the Nova Scotia Government will fill a pressing need in the field of health services of the Atlantic Provinces.

"It comes at a time when the ratio of dentists to the general population in these provinces is the lowest of any region in Canada with the exception of Saskatchewan and at a time when that ratio would become even lower if added training facilities were not provided. In fact, the number of dentists available and the output of new dentists even with the new school, which is expected to double the number of annual graduates, could be one of the worst snags in the operation of a full coverage national health insurance program now being seriously considered.

"The present Dalhousie dental school allows a maximum annual output of only 12 dentists. Experience has shown that only 80 per cent of these remain in the Atlantic Provinces for service. There are some 'imports' to offset this but deaths and retirements, which are expected to run higher than usual in the next few years because of the age of the comparatively larger number of graduates of the immediate post-World War I period, reduce the annual net increase in the dental profession to six or seven.

"The ratio of dentists to population in the Atlantic Provinces is now about one to every

3500 persons (one to every 3,348 in Nova Scotia, one to 3,100 in Prince Edward Island, one to 4,600 in New Brunswick and one to 11,000 in Newfoundland). This includes all dentists in the armed forces and in public health services as well as those in private practice.

"The ratio for Canada as a whole is one dentist to every 2,790 persons and authorities consider this is much too low. To bring the Atlantic Provinces up to even the present Canadian average in 10 years, a net increase of approximately 160 dentists, about 16 a year, would be needed.

"As the population of the Atlantic Provinces continues to grow and as the demand of the average citizen for dental services increases, as it likely will increase in rapid strides when national health insurance is introduced, the net increase needed will be much higher.

"The new Dalhousie dental building, which will provide for a doubling of the present maximum output to 24 a year, with an estimated resulting net increase of about 14 a year in the dental profession of the Atlantic Provinces, will narrow the gap between supply and need. But the university and government authorities, in carrying out the present expansion program for which they deserve commendation, should also look ahead to the time when the gap will start to widen again."

Conference on Dental Education

A three-day conference on dental teaching was held at the Faculty of Dentistry, Toronto, September 12th-14th last. Some 70 members of the Toronto Dental Faculty Staff were in attendance, together with one representative from each of the other Canadian Dental Schools.

The course was presented by the members of staff of the College of Education with Dean A. C. Lewis acting as chairman. In summary the course consisted of:

Philosophy of Education—
Prof. A. F. Skinner.

What is a Good Teacher—
Prof. D. F. Dodson.

General Methods in Teaching—
Prof. A. W. Frizzell.

Improvement of Instruction—
Prof. G. E. Tait.

Teaching of Hand Skills—
Prof. J. C. Spry.

Motivation of Learning—
Prof. C. C. Pitt.

The Place of Drill and Review—
Prof. G. E. Tait.

The Principles of Curriculum
Construction—
Prof. D. F. Dodson.

Types, Uses and Limitations of Audio
Visual Aids—
Major J. H. Grimmon.

Examinations: Their Purpose, Function
and Characteristics—
Prof. H. M. Fowler.

Illustrations of Kinds of Examinations—
Prof. R. W. B. Jackson.

Criteria for Setting and Marking
Examinations—
Prof. R. W. B. Jackson.

Setting and Marking Examinations—
Dean A. C. Lewis.

Methods of Distributing Marks—
Prof. H. M. Fowler.

Weighing and Combining Marks—
Prof. R. W. B. Jackson.

These subjects were presented by lecture and demonstration.

This teacher training course is the first of a series to be conducted for members of the teaching staff in Canadian Dental Schools. The courses are sponsored by the Council on Dental Education of the Canadian Dental Association with the assistance of the Kellogg Foundation.

Municipalities Which Have Fluoridated Water Supply—September, 1955.

PROVINCE	POPULATION
Newfoundland	none
Nova Scotia	none
Prince Edward Island	none
New Brunswick	none
Quebec	
Point Claire	10,800

Ontario

Brantford	45,000
Fort Erie	8,500
Thorold	7,500
Sudbury	60,000
Deep River	3,000
Oshawa	42,000
Toronto Township	20,000
Renfrew	8,200
Tisdale Township	8,000

Manitoba

Brandon	20,600
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Saskatchewan

Moose Jaw	27,500
Saskatoon	57,000

Alberta

none

British Columbia

Smithers	1,700
Prince George	12,500

Court Action May Delay Fluoridation in Metropolitan Toronto

Last spring (May 17th), the Metropolitan Toronto Council adopted fluoridation indicating that the water supply would be fluoridated beginning January 1956. Metropolitan Toronto is composed of 13 municipalities. The legal jurisdiction on the various municipal matters is divided, some being with the Metropolitan Council and others with the Councils of the individual municipalities. Water works are under the control of the Metropolitan Council. However, three of the municipalities have challenged the right of the Metropolitan Council to fluoridate their water supply. The case was heard during October and the decision could be delayed for several months.

1955 Directory

A limited number of 1955 directories have been printed. Copies will be supplied on request until the supply is exhausted.

PLEASE RETURN THE ANAESTHESIA QUESTIONNAIRE

Economic Security

All Men Are Mortal

PART B—Severity and Duration of Disabilities

by E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.Econ.S.

The preceding article of this series noted the high incidence amongst Canadians of illness disabling in some degree (58.5 per cent of the population at some time during the year). The total economic loss thus occasioned to the nation as a whole is of the first magnitude, probably exceeding \$1,500,000,000.00 or approximately one-half the total annual expenditure of the Dominion Government. The average period of incapacitation (51.4 days per year per person incapacitated) also is serious, but the economic problems posed thereby are not insuperable although burdensome.

From the standpoint of "economic security" from economic disaster, our concern must be with long-term disabilities which seriously interfere with or totally prevent engagement in usual occupation for remuneration. The "Canadian Sickness Survey" by the Department of National Health and Welfare and the Dominion Bureau of Statistics (The Queen's Printer, Ottawa, 1955) presents the following evidence:

1. *Basis of Assessment:* All "compensated disabilities" such as dentures, glasses for long and short-sightedness; insignificant conditions; and all records showing mental deficiency or mental illness were excluded in the survey.

2. *Measurement of Disability:* The extent to which the usual functions of the individual were affected was classified to one of four groups. Group 3—"Severely Disabled" is defined as "Disabilities . . . which interfered considerably with work or normal responsibilities. Persons not totally bed-

ridden, but generally had to take life easily, take much extra rest, or be confined to bed during acute phases. Cases included every type of disease or impairment, e.g., early congestive heart failure or coronary disease, arteriosclerosis, varicose veins, and phlebitis; neoplasms, diabetes, stomach ulcers, nephritis, and prostatitis; active asthma, bronchitis, fibrosis of the lung, and tuberculosis; arthritis, multiple sclerosis, hemiplegia, and other nervous diseases; major orthopaedic impairments resulting from disease or accident." (In general, this group appears to cover the "non-confining total disabilities" which have been discussed in earlier articles in the "Journal", particularly April and May, 1954).

Group 4—"Total Disabilities", includes "Disabilities . . . which largely necessitate confinement to bed, a wheelchair, or a sitting position . . ."

3. On the above basis, "the estimated number of persons in Canada suffering from a permanent physical disability of some degree at the time of the survey was 957,000." Of these, 423,000 fell in the Severity Groups 3 and 4 as defined above. With 236,000 in the age group 18 to 64—the years of gainful occupation—or about 3 per cent of the population in this age group.

4. *Duration of Disability:* With regard to the crucial question of duration of disability in the gainful years of life, we find:

In the age group 16 to 64 years, it is estimated:—

(a) Disabled less than		
5 years	80,000	34%
(b) Disabled 5 years to		
9 years	54,000	23%
(c) Disabled 10 years		
or more	101,000	43%

Although an analysis of duration of illness within the gainfully employed age group is not given, it is significant that cases in Severity Groups 3 and 4 between ages 25 and 44 total 88,000 or 64.7 per cent of the 136,000 between ages 45 and 64.

5. *Sex*: Contrary to what might have been expected, the survey reports: "In all age and severity groups, *males outnumbered females* in reporting permanent physical disabilities." In Severity Groups 3 and 4, ages 18 to 64, the number of male cases exceed female by approximately 10 per cent.

6. *Sources of Income to Disabled*: Of those in Severity Groups 3 and 4, aged 18 to 64, the number supported by their families was 119,000 or 51 per cent of the total; 62,000 or 26 per cent are given as deriving support from "industrial and public pensions, social assistance, and savings." While 55,000 or 23 per cent report some income from employment.

7. *Most Frequent Causes of Permanent Disability*:

(a) *Heart Disease*:

Taking into consideration persons suffering heart conditions as secondary as well as primary causes of disability, the estimated total is 180,000 with 121,000 severely or totally disabled.

(b) *Accidents*:

"While impairment due to accidents accounted for almost as great a volume of disability as heart disease, the number severely or totally disabled was much smaller — from all indications about one-third" —40,000.

(c) *Arthritis and Rheumatism*:

Estimated total of 225,000 sufferers with 115,000 severely or totally disabled.

(d) *Deafness*:

73,000 persons suffered some degree of deafness; 48,000 being in the age group 18 to 64 years.

(e) *Blindness*:

A gross estimate of 89,000 disabled persons suffered blindness or near blindness.

(f) *Chronic Diseases of the Nervous System*:

76,000 persons suffered from nervous diseases, of whom 61,000 were among the severely or totally disabled.

There being no evidence tending to suggest that dentists have any immunity to the perils besetting other people, and applying the statistics of the survey to the membership of the Canadian Dental Association, it may be assumed that over a period the following averages will be found at any one time:

Severely or totally disabled during the years of professional practice . . .	140
Disabled for up to 5 years	47
Disabled for 5 years to 9 years . . .	32
Disabled for 10 years or more . . .	61

The experience of the C.D.A. Plan to date tends to support the above: 8.9 per cent of all members applying, although still actively practicing, have had some form of permanent medical impairment—i.e., a condition which although it may not deteriorate will never be entirely overcome, even by the youngest. Of the medical histories, 47 per cent were below age 35, and 63 per cent below age 45; 26 per cent reported cardio-vascular conditions, with tuberculosis, diabetes, cancer and ulcers, in that order, the most frequent in occurrence. Accidents accounted for less than 4 per cent of the reported impairments.

Several conclusions, therefore, appear justified:

1. That disastrously long disability can and does occur with a frequency which cannot be ignored;

2. That the principal causes of long-term disability coincide with the diseases which have been found by clinical observation to occur most frequently amongst dentists;

3. That the fact that the Profession is predominantly masculine affords no protection from the incidence of permanent disability, but if anything, accentuates it;

4. That the only adequate method by which protection against the contingency of long-term disability can be secured is by a "pooling of the risk" in the profession (see January, 1954, Article);

5. That all group insurance plans are inadequate to provide the necessary protection, but afford only ancillary protection at the outset of a period of disability—useful though this may be;

6. That the same inadequacy is to be found in most individual sickness and accident insurance contracts.

The next article in this series will deal with the statistical evidence on causes of decease and rates of survival. Following this, a discussion of the economic cost of disability.

Committees and Councils

Public Relations

During the last year there has been a good deal of evidence that the people of Canada are becoming much more aware of the advantages that dentistry has to offer. In every province there has been a big increase in the number of articles, editorials and reports of various kinds in newspapers and periodicals. Invitations extended to dentists to address organizations of many types increased a great deal.

In other words the general public have become much more conscious of the fact that the profession of dentistry occupies a major place in the field of health. More people know that teeth are expected to last a lifetime and that this goal can be achieved if an adequate and realistic plan is followed.

This increased interest puts dentistry in an enviable position. While it may be difficult to give everyone the service requested, dentists must exhibit a sympathetic interest even in those cases that they feel they cannot accept as patients. Brusqueness on the telephone to the effect that an appointment is not open for several weeks, is an affront to someone in trouble. This attitude reacts unfavorably upon the whole profession.

It is the purpose of the Public Relations Committee to bring to the attention of the dentists of Canada that they, as individuals, are the public relations officers of dentistry. The welfare of the profession is wrapped up in the favorable attitude of the public.

The Public Relations Committee has endeavored to accomplish this by:

1. A series of short articles in this Journal.
2. Some control of Dental Public Health educational material appearing in the press.
3. Preparing type addresses that might be delivered to lay organizations upon a wide range of dental subjects.
4. Compiling information packets upon several aspects of dentistry ranging from fluoridation to vocational guidance.
5. Preparing short radio talks that could be used on local stations in a series.
6. Investigating the possibilities—within our budget—of T.V. as a means of dental information.

You are earnestly requested to be very conscious of your responsibility to both the public and the dental profession in your professional and personal conduct.

H. R. Skilling, Chairman

British Commonwealth News

A new dentists' bill covering dental activities in **Britain's National Health Service** is scheduled for second reading in Parliament. The bill sets up an autonomous General Dental Council of 41 members, at least 31 of whom would be members of the dental profession. The council would replace the former Dental Board which was under the

supervision of the General Medical Council. However, the bill also carries a provision for the training and use of dental nurses who would be permitted to perform extractions and place fillings. A similar measure authorizing the use of ancillary workers for dental operations failed of passage in the previous session of Parliament.

The Provinces

Nova Scotia

Architects are now working on the detailed plans for a **Dental Building for Dalhousie University**, President A. E. Kerr announced recently. The new building will be erected at the corner of University Avenue and Robie Street, to the west of the Forrest building, and will contain the most modern instructional and clinical equipment.

The government of Nova Scotia, which with other provincial governments of the Atlantic provinces has been contributing to the operation of the Dental School, has granted \$150,000 towards the cost of construction of the new building.

"There are two impelling reasons behind the university's decision to build a home for its Dental School," Dr. Kerr said. "For many years the dental school has been housed in the Forrest building in quarters which were not originally designed for the teaching of dentistry and which, therefore, have certain drawbacks. Still more important is the need to provide increased facilities as well as better ones, for the output of dentists in this area has fallen behind the increase in population. Indeed, the ratio of dentists to general population in the Atlantic provinces is the lowest of any region in Canada with the exception of Saskatchewan, being about one dentist to every 3,500 people. The new building will enable us to double our present enrolment of 48 and will permit more economical operation."

The projected school will be a three-storey building of ornamental brick and stone, matching in design and materials the Dalhousie Health Clinic, Medical Sciences building and Medical Dental library on the same campus.

Alberta

Dr. W. Ross Upton president of the **Calgary and District Dental Society**, welcomed some sixty members and guests and representatives of the press at a special pre-season meeting held in the Palliser Hotel on September 12, 1955.

Dr. Baden Powell introduced the guest speaker of the evening Dr. G. G. Exner of London, England, who, en route to Portland, Oregon, to present a post-graduate course, made Calgary his one Canadian lecture

stop. Dr. Exner, an Oral Surgeon with a Harley Street practice, delivered an illustrated lecture covering a wide range of subjects of interest to the General Practitioner, Exodontist and Oral Surgeon. He presented tips on exodontia, types and problems and methods of handling impactions, infections of dental origin and he covered apicoectomy in root canal therapy and tumors and cysts of dental interest and their treatment surgically.

Dr. Exner treated his audience to a well delineated presentation delivered with the wit and fluidity of a highly accomplished and polished lecturer. The interest elicited kept him busy answering members' questions for almost an hour after his paper was completed.

Dr. John W. Clay thanked the speaker on behalf of the society.

M.J.L.

The **Canadian Public Health Association** asked recently that fluoridation of public water supplies—under proper medical, dental, and engineering supervision—be recommended to Canadian communities as a safe and effective measure toward the prevention of tooth decay.

The Convention, held in Edmonton, Alberta, elected Dr. J. A. Melanson, chief medical health officer, Fredericton, N.B., as president of the Association. He succeeds Dr. A. Somerville, of Edmonton, Alberta's Deputy Minister of Health.

President-elect is Dr. L. A. Pequegnat, Medical Health Officer, Toronto. Vice-Presidents are: Dr. Leonard Miller, St. John's, Deputy Minister of Health for Newfoundland; Miss Electa MacLenna, Halifax, Director School of Nursing, Dalhousie University, and Dr. Stewart Murray, Senior Medical Health Officer, Vancouver.

The convention, in resolution form, praised the work of Dr. R. D. Defries, retiring as director of the Connaught Laboratories and the School of Hygiene, University of Toronto. The resolution noted that Dr. Defries "had made an outstanding contribution to public health research and to the production of biological products."

Dr. Somerville, in his presidential address, called for closer co-operation between public health and medical-care groups.

Manitoba

The Manitoba government has a new director of dental services. He is **Dr. Arthur Schwartz**, formerly a practising dentist in Kenora, Ontario.

He took over the director's post effective September 1 from Dr. H. R. Stewart, who asked for retirement on personal grounds.

Dr. Schwartz was born at Ashern, Man., and received his dental training at the University of Toronto. After three years' service with the Canadian Army Dental Corps, Dr. Schwartz entered private practice in Kenora, where he was located for eight years before his present appointment.

Quebec

The activities of the **Montreal Dental Club** during the summer were restricted to the Spring and Fall Golf Tournaments.

The spring tournament held at Grand'mere, Quebec, drew about twenty-five aspiring golfers, and after two days of "hot" golf the following were the "money" winners:

- 1st Low gross—Dr. R. Dohn
- 1st Low net—Dr. Postans
- 2nd Low gross—Dr. Mitchell
- 2nd Low net—Dr. D. Armstrong

The fall Tournament and dinner was held at the Rosemere Golf Club, Friday, September 23. As in the spring tournament Drs. Dohn and Postans were the big winners—next year they are going to bring in an import or two to defeat this pair.

- 1st Low gross—Dr. R. Dohn
- 1st Low net—Dr. T. Postans
- 2nd Low gross—Dr. R. Harvey
- 2nd Low net—Dr. B. Ward

A very encouraging turnout of about 50 golfers made this one of the finest tournaments held to date. A vote of thanks goes to Dr. Doug Armstrong for his fine organization of both meets, and let us hope that next year's meets will be bigger and better than ever.

D.J.M.

British Columbia

On Saturday, October 1st, a number of dentists from Kootenay centres convened for the semi-annual meeting of the **Kootenay Dental Society**.

Dr. M. K. Bauman and Dr. F. A. Fergie of Cranbrook acted as hosts for the occasion. Dr. Gordon Swann of Calgary was the clinician, using as his topic "Orthodontia as it Applies to the General Practitioner."

On Saturday afternoon a short business meeting was held under the Chairmanship of the President, Dr. H. G. Steed of Nelson. Dr. C. E. Bradshaw gave a resumé of the work of the Council of the College of Dental Surgeons of B.C., pointing out the extreme shortage of dental personnel. While British Columbia has the highest dentist-patient ratio in Canada, there is still a very urgent need for more dentists in the province. The only way to overcome this difficulty is to establish a Faculty of Dentistry at U.B.C.

The ladies were entertained at the home of Mrs. Fergie during the afternoon and later attended a banquet with their husbands.

The following centres were represented: Rossland, Trail, Castlegar, Nelson, Creston, Fernie, Kimberley and Cranbrook. The spring meeting is scheduled for Trail in March, 1956.

Meetings of the **Vancouver and District Dental Society** commenced on October 4th in the Hotel Vancouver with the new President, Dr. L. W. Beamish, occupying the chair.

Dr. Daniel F. Lynch, President of the American Dental Association, was the guest speaker. An outstanding personality in organized dentistry, and a practising oral surgeon in Washington, D.C., his topic in the afternoon at 4 o'clock, "Everyday Problems in Oral Surgery", proved to be both interesting and informative.

There was a cocktail party before the evening gathering, which provided an opportunity for renewal of friendship and exchange of fish stories. Dr. Lynch gave an inspiring after-dinner address on "Leadership in Dentistry".

In a pamphlet outlining the meetings until next summer, Dr. Beamish says: "For the next year all clinicians, except those on the Home Talent Program, will be from points outside British Columbia. It is not because we feel that men from afar are better, but rather that they will give us a different point of view about their specialty. Continuous association with one's own group breeds complacency and stagnation. So we hope our guests from other parts will shock us, provoke sound and healthy argument, tantalize the enquiring mind, and spur us on to further study".

Other dental societies in the province resumed activities and we briefly outline those we have learned to date:

A new season for the **Fraser Valley Den-**

tal Society got under way with a dinner meeting at the Aldergrove Hotel on September 1, when Dr. C. W. McPhail, the new president, welcomed all the old and new members. Some discussion took place regarding the part-time salary received by most dentists for their participation in the preventive dentistry school dental program.

Dr. Kellon introduced the guest speaker of the evening, one of the outstanding men in the field of prosthodontics, Dr. A. F. Rader of Vancouver, who presented a clinic on "Transographic Articulation". He stated that in the last twenty years little or no progress has been made in understanding the true mechanism of the temporo-mandibular joint. Dr. Rader has done a great deal of research on this subject and claims that the temporo-mandibular joint can be understood completely on the basis of simple mechanics using the transograph.

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The Victoria and District Dental Society had its first meeting on September 19 with Dr. Garnet Montgomery of Qualicum as the guest speaker. He spoke on "Amalgam Restorations".

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At the annual meeting of the A.D.A. in San Francisco these British Columbia men will present clinics: Dr. W. K. Sproule, Dr. D. J. Sutherland, Dr. N. C. Ferguson and Dr. W. P. Munsie. All of these men represent British Columbia at the American Academy of Foil Operations.

Other B.C. names on the A.D.A. program are Drs. R. J. O'Neil, C. Ames, J. C. Friedman, C. W. Gardner, J. E. Harrison, J. H. Merrell, C. R. Hallman and Max Nacht.

D H. M.

Ontario

The Northern Ontario Dental Association elected Dr. T. G. White, of Sault Ste Marie, as successor to retiring president Dr. A. K. Kaukinen, of Sudbury, at the 15th convention of the association in Sudbury. The three-day event, with some 200 dental delegates and their wives in attendance, was held at Memorial Hall.

Others on the executive are Dr. S. E. Caverley, of Timmins, vice-president, and Dr. L. B. Lukenda, of Sault Ste Marie, secretary-treasurer, replacing the retiring secretary, Dr. A. B. Sutherland, of Sudbury.

Dr. Sutherland was instructed to prepare a new constitution for the coming year.

At a noon-day luncheon, Rev. Earl S. Lautenslager, of St. Andrew's United

Church, was guest speaker. He took as his topic, "What Time Is It?"

The speaker deplored the fact that many professional persons come to Northern Ontario with the idea of making a packet of money and then retiring to the southern part of the country. "How wrong they are, how wrong," he declared. "This is the place to put down your roots, this is the area that is looking ahead, that is growing," he added.

He spoke of the North, and its vital and stirring appeal to young people. Introduced to listeners by Dr. F. M. Roulston, he was thanked by Dr. Kaukinen.

Sault Ste Marie extended the invitation to hold the 1956 convention there, with delegates accepting.

Among the lecturers was Major A. T. Roger, D.D.S., M.B.E., C.D. of Ottawa, who chose as his topic "Aspects of Oral Surgery". He is an instructor with the Royal Canadian Dental Corps school, and received recognition for his outstanding service to facial casualties at Basinstoke Neurological and Plastic Surgery Hospital in Britain during the second war.

Other lecturers included Oliver C. Applegate, D.D.S., D.D.Sc., F.A.C.D., Professor of Dentistry at the University of Michigan, who discussed methods of comfort and usage of partial dentures, and James Coupland, D.D.S., F.I.C.D. of Ottawa, who discussed oral surgical procedures. Interesting open forums and question-answer periods followed each lecture.

Dr. C. H. M. Williams, of Toronto, told the gathering "We believe that the dentist of Northern Ontario, and certain public-spirited citizens recognize today dental disease for what it is—a major public health problem." Professor of Periodontics, with the Faculty of Dentistry at the University of Toronto and Chairman of the Research Advisory Committee of the Faculty of Dentistry, Dr. Williams was speaking of the work of the research group he represents.

He spoke of dental disease and preventive research being undertaken, after a cheque for \$1,000 to aid in work had been given to the Northern Ontario Dental Association by J. J. Doran, of Sudbury. This is one of many gifts from individuals and foundations during the past year.

A get-together and buffet lunch was held in Memorial Hall as the conclusion to a most successful convention.

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Some forty-five years ago a **Dental Service** was first inaugurated in **Toronto schools** in order to improve the appalling condition of children's teeth. This has re-

sulted in the extensive system of school dental clinics in the city to-day. Up to the present the main method of attack has been one of repair. But successive annual dental surveys show that this is a losing battle since tooth decay is occurring as fast as treatment can be supplied. Obviously a new approach to the problem is needed.

The keyword must be prevention. Fluoridation is one vital phase in this preventive approach. Even with fluoridation, the need to observe good oral hygiene and good dietary practices will continue to be an essential requirement. With or without fluoridation, there will always remain a residual need for treatment; much less of course once fluoridation is allowed to attain maximum effectiveness. The problem thus devolves to one of helping parents to make an economically sound investment in such dental care as may be required by their children. In tackling this residual treatment need, it must be borne in mind that every child starts off in life with a healthy mouth. It is sensible to keep that mouth healthy, rather than to allow disease to gain a hold and later to try and apply costly remedies. Effort should therefore be aimed at the pre-school child. This could be done by selecting a designated experimental area in the city. The help of child health centres, schools and local dentists in that area would be enlisted in an intensive educational campaign directed initially at three-year old children and their parents. Objective of the campaign would be to demonstrate the most effective use that can be made by parents of all existing means for controlling dental diseases and to promote dental care at the earliest moment so as to avoid costly accumulation of treatment needs. Key personnel would comprise a dental hygiene team consisting of a dental hygienist, dental assistant and clerical personnel,

directed by a public health dentist. This team would teach and demonstrate the latest facts concerning good dental health in child health centres and schools. Pre-school children would also be examined and referred to private practitioners or health department clinics as circumstances warrant when treatment is needed. To assess the results of such a program, children receiving dental attention and care would be examined each year until they reach school age. The findings of this group, now five-year olds, would then be compared to the results in the case of a similar age group who have not been exposed to the program. If the results were successful the problem would be simplified; a new attitude of early attention to freshly appearing dental defects would be established instead of permitting such defects to accumulate for possible later attention at school age. The present system allows for three years immediately before school entry during which a large number of defects are permitted to accumulate, some of which can never be rectified.

It is necessary that a preventive dental approach as proposed attack the problem several years before the child enters school in order that a program of maintenance care may evolve. Dental health education, a necessary concomitant to the provision of dental care, would similarly start at a much earlier age. Such a program, even if successful, would not lessen in any way the need for fluoridation nor would the need for dental treatment disappear, but sounder economic investment in treatment would result.

The Department of Public Health has launched such a program in the Riverdale Health District. The Academy of Dentistry and Toronto East Dental Association have pledged their support.

General News

The **Aluminum Company of America** has refuted charges that sodium fluoride used in water fluoridation is a waste product of aluminum manufacturers. Opponents of fluoridation have claimed that ALCOA promotes the dental health measure to get rid of otherwise unusable fluorides. In a letter to Dr. David J. Smith, an associate research dentist on the staff of the New York State

Department of Health, Mr. John H. Furet, an ALCOA official, denied that his company was seeking a market for unusable fluorides. "... Sodium fluoride as produced by us is not a waste product of the aluminum industry," Mr. Furet said, "and other companies having no connection with the aluminum industry have and do produce sodium fluoride by the same method we use. We supply very

little sodium fluoride for water fluoridation because we believe that our fluorspar reserves are needed for the production of other fluoride chemicals needed in our own production of aluminum. We make no direct sales of sodium fluoride, all of our production being handled through chemical distributors." Mr. Furet also pointed out that the major portion of sodium silico-fluoride and a large part of sodium fluoride, both used in water fluoridation, are recovered in the acid treatment of phosphate rock, and explained that "we have no operations involving phosphate rock."

With the initiation of a **fluoridation program** at St. Petersburg, Florida, on August 9, the total number of persons receiving the benefits of the caries-preventive measure exceeded 21 million. The number of communities in the U.S. participating in programs reached 1,106 with a total population of 21,111,260.

The St. Petersburg project supplies water to the Bay Pines Veterans' Hospital and Domiciliary, Gulfport, Oldsmar and Pinellas, comprising a total population of 140,800. The project is unique in that it probably serves a larger adult age group than any other U.S. city, according to Dr. R. H. Davis of the Pinellas County Health Department. Initiation of the measure was preceded by an extensive educational program on the part of the Pinellas County Dental Society and the Pinellas County Health Department. In addition to the foregoing agencies, 35 organizations endorsed the measure. They included the Pinellas County Medical Society, 20 Parent-Teacher associations and the Chamber of Commerce.

The German Society for Jaw and Facial Surgery has elected **Professor Axhausen** as an honorary member at the 5th meeting held recently in Hamburg.

Representatives from private dental practice and dental public health were among participants contributing to the fifth annual meeting of the **Dental Public Health Section, Canadian Public Health Association**, held September 6th to 8th at Edmonton, Alberta. Conference topics included a pre-publication report of a "Study on the Use of Stannous Fluoride as a Topical Application for the Prevention of Tooth Decay", (H. R. McLaren, Department of National Health and Welfare); a paper describing "Alberta's Second Dental Health Week, Methods and Results", (K. A. Burnham,

Chairman, Alberta Dental Health Week Committee); and a "Review of Dental Care Plans for Young Children" (F. H. Compton, Toronto Department of Public Health).

In addition to the dental groups, public health physicians, public health nurses and public health educators participated at a panel discussion on "How, and how not to Encourage a Community to adopt Water Fluoridation". Members of the panel, which was jointly sponsored by the Public Health Education and Dental Public Health Sections, included A. E. Chegwin, Chairman (Department of Public Health, Saskatchewan), Christian Smith, Health Educator (Department of Public Health, Saskatchewan), E. W. Best, Health Unit Medical Director (Central Vancouver Island Health Unit) and D. J. Yeo, Dental Director (Vancouver Metropolitan Health Committee).

Speakers at the general session of the C.P.H.A. included: — J. M. Mather, M.D., D.P.H., Professor of Preventive Medicine, University of British Columbia, who presented a paper entitled "A Physician Looks at Fluoridation".

Reports of the Subcommittee on Specialization and the Committee on Proposed Qualifications, Functions and Training of the Public Health Dentist were presented at a business session. Immediate action towards the strengthening of dental sections of provincial public health associations was also urged. Officers elected for the year 1955-56 are: — R. S. Langstroth, Chairman (Fredericton), W. G. Dawson, Vice Chairman, (Halifax), and B. J. O'Meara, Secretary (Charlottetown). The 1956 annual meeting of the C.P.H.A. will be held at the Admiral Beatty Hotel in St. John, N.B.

F. C.

St. Louis residents are now drinking fluoridated water. The addition of a controlled amount of fluorides to the city's water supplies was started at one of the city's two pumping stations on September 28 and at the other station on September 29, according to an announcement by **Dr. J. Earl Smith**, St. Louis health commissioner.

St. Louis, with a population of 868,500, is the nation's eighth largest city and is the third largest city in the U.S. to fluoridate its water supply. Larger cities with fluoridation in operation are Philadelphia and Baltimore.

The launching of fluoridation in St. Louis climaxed a long campaign on behalf of the measure by the St. Louis Dental and Medical Societies and a host of civic groups.

A.D.A. News Letter
October 1, 1955.

Thermal Shock and Tooth Decay

In an article by D. G. and H. A. Pohl⁽¹⁾ they state that one of the possible reasons for the increasing incidence of tooth decay is the alternate eating of very hot and cold foods during the same meal. They submit as evidence an experiment in which extracted teeth are subjected to intense thermal shock and then tested by methods that seem to indicate a decreased ability to withstand mechanical stress. Hence they feel that structural changes may have occurred, decreasing the resistance of teeth to the decaying process.

However, tooth decay is a chemical and not a mechanical process⁽²⁾. If rapid temperature changes in the mouth alter the tooth structure in any way that should in-

crease the susceptibility to decay, experiments indicating the degree of resistance of thermally shocked teeth to chemical attack should be revealing. Possible approaches to gain such information might be the method of Pigman⁽³⁾ or the study of the rate of calcium lost from these teeth in solutions of weak acids or chelating agents.

Leon S. Vann,
2217 Black Street, Berkeley, California

REFERENCES

1. D. G. and H. A. Pohl, *Science* 120, 807 (1954)
2. H. M. Leicester, *Ann. Rev. Biochem.* 22, 345 (1953)
3. W. Pigman, *Science* 120, 810 (1954)
Science, September 2, 1955.

The Corps

Brigadier E. M. Wansbrough inspected R.C.D.C. facilities in Western Canada during October, he also attended the meeting of the American Dental Association at San Francisco, October 17 to October 20, 1955.

Lt.-Col. G. B. Shillington, Commanding Officer of No. 11 Coy. R.C.D.C., Edmonton, attended the A.D.A. and also the meeting of the American Denture Society at San Francisco 14-15 October.

Colonel C. B. H. Climo, Deputy Director General Dental Services, attended the Montreal Fall Clinic, 19 to 24 October, 1955.

Major A. T. Roger of the Royal Canadian Dental Corps School, Ottawa, presented a paper entitled "Oral Surgery" at the Northern Ontario Dental Association meeting at North Bay, September 9 to 11.

Lt. Col. J. A. MacGowan of the Directorate attended a course at the Canadian Civil Defence College, Arnprior, Ont., during the week of September 25.

Capt. J. M. A. Donely has been promoted to the rank of Major. Major Donely, 28, was born in Listowel, Ontario, but spent most of his life in Toronto. He served with the Irish Regiment from 1942 to 1945 and graduated from the University of Toronto in 1950. Since his return from the Far East in 1952 he has served in Ontario and Nova Scotia, where he is now located at Halifax. Major Donely is married.

The following officers have been released from the Canadian Dental Corps:

Capt. N. C. Baird
Capt. A. D. Smith
Capt. R. R. Warrington

THE ANNUAL MEETING

C.D.A. - W.C.D.A.

Banff, Alberta • June 3-6, 1956

See Association News for Train Transportation

In Memoriam

Edwin Herbert Wilson—Dr. Edwin Herbert Wilson of Perth, Ontario, passed away on September 20, 1955. He was 77.

Born in Bathurst Township Dr. Wilson received his early education in Perth and later attended the R.C.D.S. from which he graduated in 1906. From the year of his graduation until his demise, Dr. Wilson had practised in Perth. He examined the children in Perth schools and was commended by the Board for his early service in children's dentistry.

Dr. Wilson belonged to the Canadian Club, 100 Club, Bowling Club and was a chartered member of Perth-Up-on-Tay Branch of the Canadian Legion. He was twice Chairman of the Board of Education and had been on the Board over twenty-five years. He was Past-President of Boy Scouts' Committee and had served on the committee for twenty years. He was Past-President of Perth Great War Memorial Hospital Committee. He was Lieutenant-Colonel of the Lanark and Renfrew Scottish Regiment in 1931 and was awarded the Colonial Auxiliary Officers' Decoration. For over forty years he had been an officer in St. Paul's United Church. He was an ardent hunter and fisherman.

Dr. Wilson leaves his widow, the former Eva Campbell, a daughter, Mrs. Douglas Nicol of London, and two sons, Lt. Col. Donald M. Wilson of Halifax and Kenneth of Chibougamou, Quebec.

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William George McCabe—Dr. William George McCabe, a native of Windsor Mills passed away on September 18, 1955. He was 81.

He was a graduate of Bishop's College and practised dental surgery in the City of Valleyfield. He was a past-president of the College of Dental Surgeons of the Province of Quebec from 1938 to 1940. He was also governor of the Provincial Board of Dental Surgery for several terms, as well as president of the Council on Discipline.

The deceased was a founder of the Valleyfield Council (No. 1180) Knights of Columbus, of which he was one of the first Grand Knights. He was also a founder of the Colonel de Saleberry Assembly (4th degree), its first Faithful Navigator and was recently appointed the only honorary member.

Dr. McCabe was predeceased by his wife, the former Anna Dion. He leaves his son, Dr. Aberdeen McCabe.

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Roy Franklin Denholm—Lt. Col. Roy Franklin Denholm, O.B.E., C.D.E. died suddenly in Worthing Hospital, Sussex, England.

Lt. Col. Denholm practised as a dentist in Calgary, Alberta, from 1924 until the beginning of the Second World War, at which time he enlisted in the Royal Canadian Dental Corps.

A graduate of Toronto University Lt. Col. Denholm married in England after the war.

He is survived by his widow, Mrs. Larlie Denholm.

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Walter Manuel Gallagher—Dr. Walter M. Gallagher of Vancouver passed away on September 14 after a long illness at the age of 76.

Born in Newboro, Ontario, he graduated in 1906 from the North Pacific College in Portland, Oregon, and practised for a few years in Portland and in Sumas, Washington. After registering in B.C. in 1910, he settled in Vancouver where he practised continually until ill-health forced him to retire in the year 1948.

Surviving are his wife, Irma; three sons: Dr. J. Wilfred Gallagher, Professor of Periodontics at Chapel Hill, North Carolina; W. Lloyd of Richmond, Wash.; Herbert K. of Boston; also one brother, four sisters and nine grandchildren.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1956	Banff, Alberta	June 3rd—6th
1957	Winnipeg, Manitoba	June 23rd—26th

FUTURE EVENTS

Date	Function	Location	Officer	Address
Nov. 24	Academy of Dentistry Winter Clinic	Toronto	Dr. Robt. Marshall	200 St. Clair W. Toronto, Ontario
Nov. 27-30	Mid-Continent Dental Congress	St. Louis	St. Louis Dental Society,	8013 Maryland Ave., St. Louis 5, Missouri
Dec. 4	American Academy of Dental Medicine Meeting	New York	Dr. George J. Wilkin	45 S. Broadway, Yonkers 2, N.Y.
Feb. 5	Academy of Oral Rehabilitation of Handicapped Persons Meeting	Chicago	Dr. Hugh M. Kopel	19933 Livernois, Detroit 21, Mich.
May 13-16	Ontario Dental Association Convention	Toronto	Mrs. R. E. Booker	234 St. George St., Toronto, Ontario.
Sept. 7-14 1957	Congres de la Federation Dentaire Internationale	Rome, Italy	G. H. Leatherman	Secretary, London, England

SHORT GRADUATE COURSES

Tufts School of Dental Medicine announces the following short courses:

Jan. 4-Feb. 29 General Anaesthesia	Feb. 8-Apr. 4 Orthodontics
Jan. 9-13 Full Denture Implants	Feb. 29-Apr. 18 General Anaesthesia
Jan. 10-14 Treatment of Periodontal Problems	Mar. 19-21 Cephalographics & Diagnosis
Jan. 11-Mar. 7 Fractures of the Facial Bones	Mar. 19-23 Intravenous Anaesthesia for the Dental Office
Jan. 16-18 Splinting in Periodontics	Apr. 9-13 Periodontology
Feb. 15-16 Technique for Relining Full Upper & Lower Dentures	Apr. 6-May 4 Electrosurgery
	June 4-8 Full Denture Prosthesis

Address communications to: Dr. Irving Glickman, Director, Division of Post-Graduate Studies, 136 Harrison Avenue, Boston, Mass.

Temple University announces a short course in Orthodontics beginning January 22, 1956. For further information: Dr. Louis Herman, Director Of Postgraduate Studies, Temple University, School of Dentistry, 3223 North Broad Street, Philadelphia, Pa.

Northwestern University announces fifteen short postgraduate courses during the 1955-56 academic year. For further information write the Director of Dental Postgraduate Study, Northwestern University Dental School, 311 East Chicago Avenue, Chicago 11, Illinois.

UNIVERSITY OF TORONTO, FACULTY OF DENTISTRY **SHORT POSTGRADUATE COURSES FOR GRADUATES IN DENTISTRY**

March 5-9, 1956	ENDODONTICS	Enrolment Limit 8
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The course will include diseases of the pulp, diagnosis of pulp disease, pulp protection, pulpotomy, pulpectomy, therapy as applied to the pulpless tooth, obliteration of root canals in anterior and posterior teeth, root resection, bleaching discolored teeth, consideration of systemic diseases in relation to focal infection.

The course will be under the general direction of Dr. G. C. Hare, and Dr. Robt. Kesel, University of Illinois, will be the guest clinician.

Tuition Fee \$100.00

March 19-23, 1956	ORTHODONTICS (For the General Practitioner)	Enrolment Limit 12
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This course is designed for the general practitioner. It comprises a review of anatomical structure, the development of head and jaws, normal occlusion and, in addition, the aetiology of malocclusion, tissue reaction during orthodontic therapy and modern therapeutic methods for the interception of malocclusion. Sessions will be scheduled during which registrants may present practical cases for consultation and discussion.

The course will be under the general direction of Dr. D. H. Jenkins.

Tuition Fee \$100.00

April 23-27, 1956	PERIODONTICS	Enrolment Limit 14
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This course will include consideration of the nature of periodontal disease, examination and case management, pocket therapy, oxygen therapy, metabolic influences on the periodontium, significance of and correction of occlusal function, recession, pocket surgery, application of principles of periodontal practice to operative and prosthetic procedure.

The course will be under the general direction of Drs. C. H. M. Williams and W. G. McIntosh.

Tuition Fee \$100.00

April 30-May 4, 1956	DENTAL ORAL SURGERY AND ANAESTHESIA	Enrolment Limit 12
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The course will include a brief review of the fundamentals of surgery, including anatomy, pathology, radiography, differential diagnosis, pre-operative and post-operative considerations, including a discussion of the systemic factors which might limit or contraindicate the extraction of teeth, together with the latest developments in chemotherapy. Instruction will be given in local and general anaesthesia, the pathological relationship of the teeth to the maxillary sinus, fractures of the jaws, cysts, root resections, abnormal frenae, malposed and impacted teeth, cellulitis and deep neck infections, flap operations and the removal of difficult teeth and roots. An effort will be made to deal specifically with the problems which confront the general practitioner in his office.

The course will be under the general direction of Dr. J. H. Johnson.

Tuition Fee \$100.00

Those interested are asked to inquire respecting enrolment. Please address inquiries to: The Chairman, Division of Postgraduate Studies, Faculty of Dentistry, University of Toronto, 230 College Street, Toronto 2-B, Ontario.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Service d'endodontie en un minimum de séances

par VINCENT TREMBLAY, D.D.S.,
Montréal, Qué.

CONSIDERATIONS GENERALES:

L'endodontie a fait durant ces dernières années un progrès notable; autrefois, ses interventions étaient longues et incertaines, tant qu'au succès final. Aujourd'hui, ses traitements sont rapides et surs. Il n'y a pas si longtemps, on se contentait d'ouvrir la dent, de déposer dans le canal au milieu de débris de toutes sortes un médicament antiseptique et de laisser le tout exposé à l'invasion de la salive.

La dent était ainsi conservée pour une période indéterminée jusqu'au noircissement de la couronne ou jusqu'à la formation d'un abcès chronique autour de l'apex. Cette vieille méthode n'a plus sa place dans notre ère moderne où des techniques rigoureusement scientifiques ont pris sa place. Les médicaments eux-mêmes

se sont améliorés grâce à une meilleure connaissance et une meilleure application des principes de physiologie, de pathologie et de pharmacologie de notre profession. Il est maintenant possible, dans la majorité des cas, de conserver une dent, sans douleur, en lui préservant sa couleur originale pour de longues périodes. Avec des techniques rapides et pratiques, il est facile de diminuer le temps exigé par le traitement et, en conséquence, les honoraires du service. Ainsi un plus grand nombre de patients peuvent profiter de ces traitements et conserver leurs dents naturelles en évitant les ennuis de la prothèse.

LE CHOIX DES CAS:

Loin de nous la pensée de prétendre réussir de tous les cas; il faut établir un

Conférence prononcée au Congrès de l'Association dentaire
canadienne, à Toronto, en mai 1955.

diagnostic différentiel basé sur les chances de réussite, donc sur le pronostic. Il est des cas, où, d'emblée, le pourcentage du succès est trop faible et le diagnostic est nettement défavorable. Rien ne sert de tenter le traitement du canal d'une dent dont la fonction masticatoire est nulle; de même, une dent, dont la couronne est avariée à un degré tel que sa reconstitution s'avère douteuse, même avec l'insertion d'un pivot, ne doit pas être traitée. Il faut aussi négliger les dents dont le procès alvéolaire est résorbé d'une façon incurable. L'endodontiste doit donc choisir ses cas avec grand soin et ne pas entreprendre de traitement sur des dents douteuses; il devrait s'attarder seulement aux dents dont les couronnes sont solides, ou du moins susceptibles d'être reconstituées d'une manière convenable sans frais exagérés.

Après avoir considéré une foule de facteurs que nous n'énumérerons pas ici et après avoir tenu compte du pronostic d'un cas, l'endodontiste est en mesure de faire son choix. Quand il a décidé de traiter une dent, il faut choisir la méthode ou la technique qui convient le mieux aux circonstances. Doit-il opter pour la méthode conservatrice ou pour la méthode chirurgicale? La méthode conservatrice consiste dans le traitement du canal dentaire seul, avec, comme accès, la couronne de la dent. La méthode chirurgicale supporte une intervention dans l'os du maxillaire, au pourtour de l'apex, en plus des manipulations ordinaires par voie dentaire.

Le choix de la technique, conservatrice ou chirurgicale, ne doit pas se faire au hasard, ni d'après le goût ou la préférence de l'opérateur. Il y a des règles bien définies, qui régissent l'adoption de l'une ou de l'autre méthode. Elaborons un peu sur le sujet.

Le traitement conservateur est indiqué quand la pulpe est à peine touchée, soit par la carie, soit par un usage effréné d'instruments de dentisterie opératoire, quand une infection est présente dans la chambre pulpaire seulement ou quand cette infection est limitée aux cellules os-

seuses entourant immédiatement l'apex de la racine.

Plus tôt le patient est traité après un accident à la pulpe d'une de ses dents, plus minime sera le traitement et le procédé conservateur est alors envisagé. Il en est de même pour les tissus des autres parties de l'organisme; une infection récente couvre un champ tissulaire assez limité; une vieille infection s'étend en profondeur.

Sous l'effet de l'irritation microbienne et toxique, le processus inflammatoire du système reticulo-endothélial élabore, dans les cellules des tissus, une zone ou une barrière de défense formée de tissu conjonctif et d'éléments figurés du sang.

Cette protection naturelle se rencontre fréquemment autour des apex des dents qui sont le siège d'infection chronique de longue durée. Cet état dicte un traitement chirurgical à l'endodontiste, car l'élimination de ce granulome ou de ce kyste par une médication consumerait une période de temps trop longue et pour le patient et pour l'opérateur.

Dans les cas douteux, où on hésite entre le traitement conservateur et le traitement chirurgical, la meilleure façon consiste à stériliser le canal, à l'obturer parfaitement et à garder la dent sous observation.

Il arrive souvent qu'une zone de raréfaction apicale (Rayons X) s'élimine par un traitement conservateur; dans ce cas, la décalcification des cellules osseuses entourant l'apex n'était pas causée par un processus infectieux, mais seulement inflammatoire, car il ne peut y avoir de guérison en présence d'infection.

Si après un certain temps (quelques mois à un an) l'os apical ne semble pas se recalcifier, il faut alors procéder à un curetage de la région, sans intervention dans le canal, surtout si le patient ressent encore une sensibilité à la pression sur sa dent.

Nous jugeons cette attitude des plus logique et nous croyons qu'il vaut mieux commencer par les procédures les plus simples avant d'aborder les plus compliquées et les plus traumatisantes.

IMPORTANCE DU TRAITEMENT MECANIQUE DU CANAL

Il faut souligner l'importance de l'aspect mécanique du traitement de canal. Le canal doit être agrandi de débarrassé de tous les débris qui l'encombrent avant d'y insérer des médicaments. Il est important d'élargir le canal, car, à l'examen microscopique des parois du canal, on peut noter la présence d'une surface rugueuse composée d'une multitude de petits trous. Ces cavités infimes donnent abri à des agglomérations de bactéries, qui ne peuvent être délogées facilement, à moins d'obtenir une surface de dentine polie. En agrandissant le lumen du canal, on clive les parois, on déloge ces nids microbiens et on facilite l'action des lavages et des médicaments. Une surface unie se nettoie plus facilement et est plus accessible aux antiseptiques ou aux antibiotiques. Un canal plus large s'obture plus facilement et on peut y condenser plus facilement la substance obturatrice.

Comme les parois du canal convergent vers l'apex, en agrandissant le canal, on prévient la surcondensation de la pâte obturatrice à l'apex. Cette phase du travail endodontique garde une grande importance et on peut dire, sans crainte de se tromper, qu'une bonne partie des insuccès de traitements de canaux est due à une incompréhension de cet aspect mécanique du travail. Une praticien débordé de besogne néglige parfois cette opération de l'élargissement du canal, parce qu'elle exige beaucoup de temps et beaucoup de patience. L'agrandissement d'un canal peut demander environ 30 minutes, tandis que le nettoyage, le lavage et l'introduction de médicaments peuvent se faire dans une quinzaine de minutes.

STERILISATION DU CANAL—COMPARAISON DES MEDICAMENTS UTILISES EN CLINIQUE:

La stérilisation du canal, quoiqu'elle ait son importance, joue un rôle secondaire à celui de l'action mécanique des instruments. A l'aide des médicaments mis à notre disposition aujourd'hui, nous pouvons obtenir la stérilisation d'un canal

au cours d'une seule séance, quand nous avons à traiter un cas favorable. Mais aucun médicament, si puissant soit-il, ne peut agir efficacement dans un canal débridé. L'action d'un médicament est grandement diminuée par la présence d'une infection.

ETUDE DE 60 CAS TRAITES AU PARAMONCHLOROPHENOL:

Nous avons traité avec succès un grand nombre de canaux à l'aide du médicament connu sous le nom de paramonochlorophénol.

Pour donner plus de valeur à nos statistiques, nous avons mis de côté les cas de pulpe exposée par des instruments stériles et ceux où le contenu de la chambre et des canaux pulpaire était stérile. Nous n'avons retenu que les cas traités à notre clinique, où les dents montraient au premier abord un canal infecté. Dès le deuxième traitement, c'est-à-dire après deux insertions de paramonochlorophénol, nous avons obtenu une première culture négative. Ce qui veut dire que, dans un canal infecté, après la préparation mécanique, le lavage et le scellement au paramonochlorophénol pour deux périodes de quarante-huit heures, le canal était et demeurait stérile.

ETUDE DE 30 CAS TRAITES AU P/B.S.C. DE GROSSMAN:

Nous avons choisi la même méthode que ci-haut et choisi des canaux infectés seulement. Nous avons obtenu une moyenne de 1.6 traitements avant d'obtenir la première culture négative. Le milieu de culture employé était une bouillon de boeuf contenant du théoglyconate de sodium sans inhibiteur. Après consultation avec un bactériologiste, nous avons pensé que la quantité de médicaments utilisée était petite comparée à la quantité de bactéries apportées dans l'éprouvette de culture. Nos résultats avec ce médicament sont légèrement plus favorables que ceux obtenus avec le paramonochlorophénol. Cependant, nous avons remarqué des cas de sensibilité de la dent que nous avons attribuée à une pression

trop forte occasionnée par la pâte à vé-
hicule huileux; de plus, certaines cultures,
stériles après 48 heures, devenaient posi-
tives après quelques jours additionnels
d'incubation.

ETUDE DE 20 CAS TRAITES AVEC LA PATE
D.C.P. DU DOCTEUR STEWART:

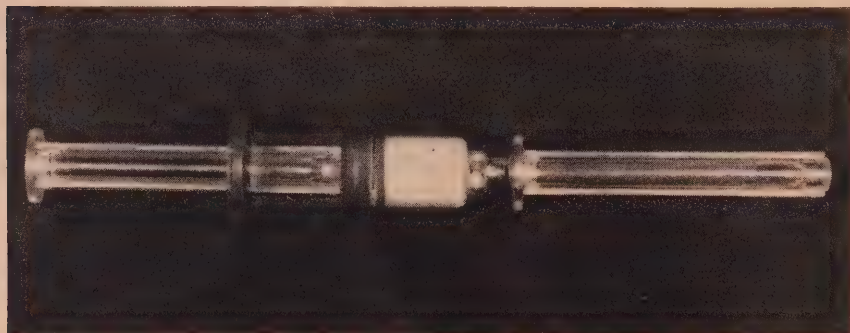
Cette fois encore, nous avons choisi des
cas où il y avait déjà infection. Dans cha-
cun de nos traitements, nous avons ob-
tenu un canal stérile après une seule
application de cette pâte durant 48 heures,
et ce, pour tous les cas. Ce médicament, à
notre avis, s'est montré supérieur à tous
les autres pour la stérilisation d'un can-
nal. Ce composé antibiotique, antihista-
minique protège le patient contre des
réactions allergiques toujours possibles et
possède pour autant un pouvoir bacté-
ricide excellent.

Nous avons utilisé cette préparation de
la même manière que les autres, sous un
double scellement, sauf que nous avons
rempli à satiété le canal jusqu'à ce que
le patient nous signifie qu'il avait la sen-
sation que la substance débordait à l'apex.
Malgré cette pression, nous n'avons pas
eu un seul cas de sensibilité après le
traitement. Nous croyons que cette ab-

sence de réaction irritante est due à la
présence d'agent anti-histaminique. Nous
avons utilisé le même milieu de culture,
essayant d'obtenir une bonne quantité
d'exudat du canal afin de surpasser ce
qui restait de médicament. Bien que le
nombre de cas observés est petit, nous
avons grande confiance en ce médica-
ment. Nous voulons continuer, l'an pro-
chain, à utiliser différentes cultures et
nous ferons rapport sur l'absence clini-
que d'irritation.

OBTURATION FINALE DU CANAL:

Le gutta-percha avec condensation la-
térale et l'usage d'un ciment scellant
donne d'excellents résultats pour les an-
térieures. Les pointes d'argent calibrées
donnent aussi d'excellents résultats. Ce-
pendant, il y a des cas où les pointes
d'argent n'obturent que le tiers apical du
canal sans remplir parfaitement les deux
autres tiers, spécialement sur certaines
prémolaires du haut et le canal palatin
des molaires du haut. Dans ces cas, nous
approuvons l'usage de pointes de gutta-
percha pour la partie non obturée. La
même technique est employée avec suc-
cès pour les apex recourbés des latérales,
où le canal est ouvert avec une lime no



La pâte D.C.P. du Dr Stewart se présente dans une seringue munie d'une aiguille de calibre 21. Sa consistance est telle qu'elle peut être facilement injectée dans le canal jusqu'à ce que celui-ci soit rempli complètement. Ensuite une pointe de papier presse le médicament contre les parois, et le canal est fermé sous un double scellement. Même en faisant une légère pression, les cas d'irritation sont rares, à cause de la présence d'un antihistaminique dans le composé. Ceci réduit de beaucoup la sensibilité de la dent si fréquente à la suite de l'irritation mécanique de nos instruments dans la préparation du canal.

3. Une pointe d'argent no 2 est employée pour obturer la partie courbée de l'apex et alors fait suite la combinaison de pointes d'argent et de gutta-percha pour le reste du canal.

**BLESSURES ACCIDENTELLES AUX JEUNES
DENTS PERMANENTS—CHOIX ENTRE LA
PULPOTOMIE ET LE TRAITEMENT COMPLET
DU CANAL**

Si la pulpe est exposée et si le coiffage de pulpe ne peut se pratiquer, notre choix doit se faire entre la pulpotomie et le traitement de canal. Si nous voyons le jeune patient moins de deux jour après l'accident, une pulpotomie a de grandes chances de succès et laissera l'avantage définitif de permettre à la racine et à l'apex de se refermer normalement. Toutefois, si la pulpe a été exposée trop longtemps à la salive, nous croyons qu'un

traitement de canal complet doit être fait avec des techniques spéciales pour condenser le gutta-percha aux apex largement ouverts.

Un plastique semi-permanent avec rétention dans ce qui reste de la chambre pulpaire, en employant un corps de plastique, fera une restauration idéale et pratique en attendant la résorption de la gencive, et à un âge plus avancé permettre l'insertion d'une couronne plus solide.

FORMULE DE LA PATE D.C.P. DU DR STEWART

Dibenzylethylenediamine-Pénicilline	
(Bicilline)	300,000 unités
Pérazile (antihistamine)	100 milligrammes
Chloromycétine (Cristalline)	125 milligrammes
Propylène glycole	0.25 c.c.
Onguent de Xylocaïne 5%	0.25 c.c.

La première automobile du docteur H.-Edmond Casgrain

par PAUL-EMILE POITRAS, D.D.S., Montréal

Dans l'après-midi de vendredi, le 2 septembre 1955, deux-cent-cinquante automobiles, dont la date de fabrication variait entre les années 1900 et 1930, arrivèrent à Montréal. (La plus jeune avait déjà vingt-cinq ans). Elles étaient parties de Niagara-Falls, N.-Y., lundi, le 29 août, à l'allure folle de trente milles à l'heure, assurées de brûler en quelques jours la distance de plus de quatre cents milles, séparant les deux villes; évidemment on ne comptait pas les heures passées à visiter Toronto et les Milles-Iles.

Ce circuit, nommé Tour Glidden, a une histoire qu'un des participants a voulu raconter, tout en se délassant de sa randonnée.

Charles Glidden, en 1905, groupait pour la première fois trente-deux chauffeurs et automobiles dans le but de les voir franchir aller et retour la distance de la ville, New-York, à la capitale de l'Etat du New-Hampshire, Concord, et ainsi prouver que les voitures "sans chevaux" étaient supérieures aux voitures "à traction animale", même en faisant la part des crevaisons de pneu et des pannes de moteur nombreuses alors.

Depuis sa fondation, les randonnées du Tour Glidden se sont toujours déroulées aux Etats-Unis, mais, à l'occasion de son jubilé, les directeurs avaient jugé à propos de demander aux douaniers de laisser les automobiles antiques enjamber la frontière canadienne. Ce défilé pittoresque comptait dix-sept voitures, identifiées par des licences canadiennes et la balance venait des états américains dont l'une portait une licence de Californie.

Le Ford à pédale, le tacot ayant un seul cylindre, la bagnole, montée sur des roues de bois hautes comme les roues d'un boughie, la limousine démodée, ronflaient, roulaient, avançaient à qui mieux sur des routes pavées d'asphalte.

La vue d'une Stanley-Steamer-1914, actionnée à la vapeur comme une locomotive, d'une vitesse de soixante milles à l'heure, d'une puissance de vingt chevaux-vapeur, m'a rappelé des jours d'autrefois. Ces autos, tombées en désuétude, ayant encore gardé la possibilité de se déplacer m'ont permis pendant quelques instants de revivre des heures de ma jeunesse à la pensée de certains voyages du début du siècle, où en plus du plaisir d'un transport rapide, aveuglé de nuages de poussière, restait le charme de raconter aux connaissances moins favorisées des aventures exagérées à plaisir.

Ce fait divers, vieux seulement de quelques mois, a mis de l'avant un autre fait, plus âgé celui-là, pouvant intéresser les dentistes qui aiment l'histoire. Ce fait, sans importance cependant, a contribué à la disparition des chevaux, si on excepte les chevaux trotteurs que les amateurs de courses ne se lassent pas d'aller voir.

Des reminiscences ont afflué pour me rappeler que la première voiture à se mouvoir par ses propres moyens dans la province de Québec et même en Canada avait été importée de France et achetée par un chirurgien-dentiste de la ville de Québec: le docteur H.-Edmond Casgrain. Ses concitoyens, surpris, étonnés, le 5 juin 1895, regardaient se déplacer, aller cà et là, sans l'aide d'un cheval, dans les rues de la haute ville, cette voiture conduite à l'aide d'un guidon dirigé par la main du docteur.

Pourtant personne ne cria au miracle en dépit de cette innovation laquelle, en moins de vingt-cinq ans, révolutionnera la manière de vivre et détrônera le cheval. Le pire fut de s'adapter aux changements subits apportés par l'automobile en contradiction avec les habitudes d'une vie aimée, passée au foyer.

Cette machine qui escaladait les côtes,

dévorait l'espace, était d'une dépense minime; elle avait été payée, le 5 février 1895, la somme de six cents dollars à l'usine française Léon Bollée par l'entremise de l'agence H. Beauley pour être livrée en vrac dans le port de Québec à l'ouverture de la navigation, au mois de mai suivant. C'était un tricycle: trois roues, deux places dont l'une était réservée au conducteur, le docteur, l'autre à une invitée, ordinairement son épouse.

Madame Casgrain, de son nom de fille, Emma Gaudreau, était la soeur du dentiste Stanislas Gaudreau. Dentiste elle-même, elle exerça sa profession avec son mari à Québec après avoir obtenu sa licence, le 9 avril 1898; elle cessa ses activités professionnelles, en 1922, et mourut, le 7 octobre 1934, âgée de soixante-treize ans.

Cette digression étant achevée, passons à certaines explications au sujet de cette voiturette; elle était dirigée par les deux roues antérieures et recevait sa traction de la roue postérieure; la carrosserie,

très basse, assurait une grande stabilité, principalement l'automne, lorsque le froid rend plus sensibles les cahots de la route. Le chauffeur et le voyageur avaient un siège individuel, l'un plus en avant que l'autre; le moteur était placé de chaque côté de la roue-motrice; à l'arrière était le réservoir d'une capacité de sept litres d'essence qui alimentait par gravité le carburateur, d'une quantité suffisante pour parcourir une cinquantaine de milles. (La gazoline, à cette époque, se détaillait au prix de six cents le gallon).

Le docteur était devenu morose à la chute des premières neiges du fait que son automobile fût immobilisée, mais son sourire revint, au mois de janvier 1898, lorsqu'il eût imaginé de remplacer les roues antérieures par des skis lesquels glissent facilement sur la glace et de garnir le pneu de la roue arrière d'une semelle de clous d'acier dont l'unique but était d'avoir la même force de traction qu'en été. L'auto-neige était inventée.

Un journal, publié en 1897, raconte un



Le docteur et madame H.-Edmond Casgrain janvier 1898

Reproduction d'un bois Collection Paul-E. Poitras

voyage extraordinaire d'une vingtaine de milles exécuté dans une limite record: "La promenade de Québec au Cap-Rouge s'est faite en une heure et quart, montre en mains. Le docteur Casgrain et un ami qui l'accompagnait ne sont descendus qu'à leur retour au point de départ".

La troisième automobile du pays et la première à circuler dans les rues de la cité de Montréal, (la seconde était la propriété, avril 1898, de M. John Moodie, de Port Nelson, Ontario), était conduite, le 21 avril 1899, par monsieur U. H. Dandurand. Son propriétaire était tout heureux de balader dans la ville son honneur le maire, Raymond Préfontaine, devenu plus tard ministre de la marine dans le cabinet de Sir Wilfrid Laurier.

Toutes les raisons sont bonnes lorsqu'un gouvernement entrevoit la possibilité d'augmenter son revenu en découvrant une manière nouvelle de taxer ses administrés, presque à leur insu. C'est pourquoi, les échevins d'alors ne laissèrent pas passer cette magnifique occasion

d'imposer un impôt. Ils demandèrent à la Commission des Finances d'émettre à tous les propriétaires de voitures automobiles, présents et futurs, un permis de circulation. La Commission des Finances, présidée par Sir Hormidas Laporte, devenu maire plus tard, solutionna la question en octroyant une licence de bicyclette d'un dollars par année à ce pionnier, U. H. Dandurand.

Références:

Canadian Motorist — November 1926 — First Winter Motoring in Canada by Warren B. Hastings.

L'Information Médicale et Paramédicale — 20 janvier 1953 — Du cheval à l'automobile, Paul-E. Poitras D.D.S.

La Presse — 31 janvier 1945 — Progrès ! Progrès ! Sainte-Foy.

La Presse — 17 février 1948 — A la lumière du passé. Sainte-Foy.

La Patrie — 6 mars 1955 — Vieux chevaux, vieilles autos. Damase Potvin.

2043 rue Saint-Denis.

Nouvelles de l'Association

Transport par train pour le Congrès de Banff, de l'Est du Canada

Plusieurs membres de l'Association ont manifesté leur désir de voyager à bord du train "Le Canadien" pour se rendre à Banff en juin prochain. Pour s'assurer des places à bord de ce train luxueux, il faut s'y prendre à la bonne heure. Les autorités du chemin de fer Canadien Pacifique nous ont assuré tout leur concours à condition de réserver les sièges à l'avance et on a conclu à ce sujet des conditions spéciales pour les dentistes, qui habitent l'est du pays. On doit s'adresser aux endroits suivants:

Pour Toronto, à M. Fred Patterson
C.P.R. Building, chambre 101
King and Yonge Streets
Toronto, Ont.

Pour la région de Montréal et l'est, à
M. J. M. Cowan
Bureau du Canadien Pacifique de Montréal
Montréal, P. Qué.

ou

M. H. Sequin
Bureau du Canadien Pacifique de Montréal
Montréal, P. Qué.

Pour la région d'Ottawa, à
M. J. B. McNee
Bureau du Canadien Pacifique d'Ottawa
Ottawa, Ont.

ou à votre agent local de chemin de fer.

Le Bureau des Gouverneurs s'assemblera du 30 au 2 juin et le Congrès aura lieu du 3 au 6 juin 1955.

Pour les membres qui doivent assister aux réunions du Bureau des Gouverneurs et qui s'y rendront par train, le départ devra se faire de Montréal, Toronto ou Ottawa dimanche, p.m., le 27 mai et l'arrivée se fera à Banff, mardi p.m.

Pour les membres qui assistent au Congrès et qui s'y rendent par train, le départ devra se faire de Montréal, de Toronto ou d'Ottawa jeudi, le 31 mai et l'arrivée se fera à Banff, samedi, p.m., le 2 juin (ou le départ, vendredi, pour arriver dimanche p.m.). Tous les places à bord du "Canadien" sont réservées. On ne peut pas ajouter de wagons. On réservera les places par ordre de demandes. Il n'est pas nécessaire de payer pour le voyage tout de suite, mais il faut retenir très tôt.

Nouvelle édifice pour la faculté dentaire de Dalhousie

Le journal Halifax Mail Star a publié l'éditorial suivant, vendredi, le 23 septembre dernier:

"Pour répondre aux besoins dentaires"

Le nouvel édifice qui abritera la faculté dentaire de l'Université Dalhousie répond à un besoin urgent dans le domaine des services de santé des provinces maritimes; cet édifice est construit grâce à un octroi substantiel du gouvernement de Nouvelle-Ecosse. Cet immeuble arrive à son heure, puisque la proportion des dentistes en rapport avec la population de ces provinces est la plus basse de tout le Canada, si on excepte la Saskatchewan; cette proportion risquait fort de baisser si les facilités pour entraîner un plus grand nombre de dentistes n'avaient pas été augmentées. En fait, le nombre des dentistes qui exercent actuellement, même additionnés des nouveaux diplômés (dont la quantité pourra être doublée avec un nouveau local), pourrait être une objection sérieuse à tout plan d'assurance-santé couvrant tout de domaine de la santé. Et on sait que la question d'assurance-santé est à l'ordre du jour dans les projets du gouvernement.

La faculté actuelle de Dalhousie ne peut fournir qu'un maximum de 12 dentistes, par année. Seulement environ 80% de ces nouveaux dentistes s'installent dans les provinces maritimes. Quelques-uns de l'extérieur viennent exercer chez nous, mais ces nouveaux dentistes n'augmentent le nombre total de dentistes que de 7 ou de 8 par année, parce que les morts et les retraitements annuels sont assez nombreuses à cause de la moyenne d'âge assez élevée des dentistes qui ont terminé leurs études dans la période de la première grande guerre.

La proportion des dentistes par rapport à la population se chiffre à environ 1 dentiste par 3,500 habitants (1 par 3,348, en Nouvelle-Ecosse, 1 par 3,100 à l'Île-du-Prince-Édouard, 1 par 4,600 au Nouveau-Brunswick et 1 par 11,000, à Terre-Neuve). Ce nombre comprend les dentistes de l'armée, ceux qui travaillent dans les services d'hygiène dentaire publique et ceux qui sont en clientèle privée.

La proportion générale des dentistes au Canada est de 1 dentiste par 2,790 habitants et on trouve déjà cette proportion trop basse.

Pour amener la proportion des dentistes des provinces maritimes au moins égale à celle de tout le Canada en dix ans, il faudrait environ 160 dentistes, soit 16 par année. Comme la population des provinces maritimes augmente sans cesse et comme la demande pour des soins dentaires se fait de plus en plus pressante, et comme cette demande s'accroît davantage avec la mise en force d'un plan d'assurance-santé, il faut nécessairement plus de dentistes.

Le nouvel édifice dentaire, construit de façon à doubler le maximum actuel à 24, par année, (ce qui veut dire que 14 dentistes de plus exerceront dans les provinces maritimes, chaque année), permettra de réduire l'écart qui existe entre l'offre et la demande. Mais l'Université et le

gouvernement, qui méritent des félicitations pour leur programme d'expansion, devraient tout de suite songer à l'écart qui ne manquera pas de se produire dans un avenir assez rapproché."

Municipalité canadiennes qui fluorurent leur eau de consommation, en date de septembre 1955

<i>Province</i>	<i>Population</i>
Terre-Neuve	
aucune	
Nouvelle-Ecosse	
aucune	
Ile-du-Prince-Edouard	
aucune	
Nouveau-Brunswick	
aucune	
Québec	
Pointe Claire	10,800
Ontario	
Brantford	45,000
Fort Erie	8,500
Thorold	7,500
Sudbury	60,000
Deep River	3,000
Oshawa	42,000
Toronto Township	20,000
Renfrew	8,200
Tisdale Township	8,000
Manitoba	
Brandon	20,600
Saskatchewan	
Moose Jaw	27,500
Saskatoon	57,000
Alberta	
aucune	
Colombie britannique	
Smithers	4,000
St-Georges	10,000

Réunion de professeurs des facultés dentaires

A la faculté dentaire de l'Université de Toronto, du 12 au 16 septembre, il y a eut une conférence de trois jours sur l'enseignement dentaire. Etaient présents environ 70 membres du corps professoral de la faculté de Toronto et un représentant de chacune des cinq écoles canadiennes.

Les professeurs de l'Ecole Normale de l'Université de Toronto, sous la direction du doyen, M. A. C. Lewis, faisaient les frais des cours. En résumé, les cours portaient sur:

La philosophie de l'enseignement, par le professeur A. F. Skinner

Quelles qualités doit posséder un bon professeur? par le professeur D. F. Dodson

Techniques générales de pédagogie, par le professeur A. W. Frizzeel

Amélioration de l'enseignement, par le professeur G. E. Tait

Enseignement de la dextérité, par le professeur J. C. Spry

La motivation du savoir, par le professeur C. C. Pitt

Le rôle des exercices et des revisions, par le professeur G. E. Tait

Les principes à suivre dans l'élaboration d'un curriculum, par le professeur Dodson

Les genres, l'emploi et les limites des adjuvants audio-visuels, par le major J. H. Grimmon

Les examens, leur but, leur fonction et leurs caractéristiques, par le professeur H. M. Fowler

Exemples de types d'examen, par le professeur R. W. B. Jackson

Principes d'élaboration et de correction des examens, par le professeur R. W. B. Jackson

Elaboration et correction d'examen, par A. C. Lewis, doyen

Méthodes d'attribuer des notes, par le professeur H. M. Fowler

Evaluation et compilation des notes, par le professeur R. W. B. Jackson.

Ces matières firent l'objet de cours et de démonstrations. Cette conférence est la première d'une série qui est mise à la disposition des membres des corps professoraux des facultés dentaires canadiennes.

Le Conseil d'Enseignement dentaire de l'Association dentaire canadienne avec l'appui pécuniaire de la Fondation Kellogg, organise ces cours.

Des procédures légales peuvent retarder la fluoruration de l'eau dans le Grand Toronto

Au printemps dernier (le 17 mai), le Conseil métropolitain de Toronto adoptait la fluoruration avec l'intention de commencer cette mesure en janvier 1956. Le Grand Toronto compte 13 municipalités. De celles-ci, un certain nombre doivent se plier aux règlements du Toronto métropolitain, tandis que d'autres ont gardé leur autonomie dans certains domaines. L'aqueduc municipal est contrôlé par le Grand Toronto. Trois municipalités contestent le droit du Conseil métropolitain de fluorurer leur eau de consommation et leur cause est inscrite devant les tribunaux pour octobre. Il peut s'écouler plusieurs mois avant que le jugement soit rendu.

Bottin de 1955

On a imprimé un certain nombre de bottins de 1955; on en donnera des copies, sur demande, jusqu'à ce que la réserve soit épuisée.

Décision au sujet de l'assurance-santé

On annonce une réunion fédéro-provinciale pour le début d'octobre. On croyait tout d'abord qu'il ne serait pas question de santé à cette conférence; mais à la suite de pressions exercées par certaines provinces, on a inscrit à l'agenda l'organisation nationale de la santé. Les journaux ont déjà publié des déclarations faites par des premiers ministres de certaines provinces sur la question et ces vues reflètent le sentiment de leur cabinet respectif; on notera que

toutes ces opinions ne sont pas unanimes. Au cours de l'été, on a beaucoup agité, dans les cercles des gouvernements des provinces, la question d'assurance-santé en vue de cette conférence. Tous les organismes qui s'intéressent à la santé attendent avec beaucoup d'impatience la tenue de cette conférence.

Le docteur Miller nommé au Bureau des Gouverneurs

Le Collège des Chirugiens-Dentistes de la province de Colombie Britannique annonce la nomination du docteur William Miller, de Vancouver, au Bureau des Gouverneurs de l'A.D.C. Le docteur Miller fait partie du Conseil d'Enseignement dentaire depuis plusieurs années. Il était membre du Conseil de la Colombie Britannique et il en est devenu président récemment. Jusqu'à présent, il faisait partie du Bureau National d'Examen dentaire, comme représentant de sa province; le docteur J. R. Ingledew lui succède à ce poste. Le docteur Miller prend la place du docteur H. M. Cline, qui représentait la Colombie Britannique au Bureau des Gouverneurs. Le docteur Cline était membre du Bureau depuis 1948 et il avait été président de l'Association en 1951-1952.

Le docteur D. Prescott Mowry est décédé

Après plusieurs mois de maladie, le docteur Prescott Mowry, qui était doyen de la faculté dentaire de l'Université McGill, est mort, le 2 août.

Le docteur Mowry était né à Halliston, Mass., en 1894; il avait terminé ses études à McGill en 1917 et fait partie du corps professoral depuis 1929. En plus de ses fonctions de doyen, il était chef du service dentaire de l'Hôpital Général de Montréal, consultant à l'Hôpital St. Mary's et de l'Hôpital Royal Victoria de Montréal.

Il était fellow de Collège International des Dentistes et du Collège Américain des Dentistes. Le docteur Mowry s'occupait activement des affaires municipales puisqu'il fut conseiller de la ville de Montréal, durant un terme et membre du Service de Santé de la ville. Il laisse son épouse et un fils, Stephen, qui demeure en Floride.

Le docteur Hillard Nevin périt dans l'ouragan

Le docteur Hillard Nevin, de Brooklyn, président de la Cie Novocol Chemical, a été tué, le 12 août dernier, avec sa femme et ses deux enfants, quand son yacht a été emporté dans l'ouragan Connie. Il était diplômé de l'Université de Toronto en 1938 et il avait quarante-deux ans.

Le docteur Joachim de Bruxelles, élu président de la Fédération dentaire internationale

Le docteur Albert Joachim, de Bruxelles, Belgique, a été élu président de la Fédération dentaire internationale, au cours du 43e congrès tenu au milieu du mois d'août à

Copenhague. Le docteur Joachim succède au docteur Oren Olivier, de Nashville, Tenn. qui avait été président durant de nombreuses années. Les docteurs C. F. L. Nord, d'Amsterdam, fut réélu président honoraire et Harold Hillenbrand, de Chicago, secrétaire de l'A.D.A. et chef de la délégation américaine, comme un des six vice-présidents honoraires. Le docteur Obed H. Moen, de Watertown, Wis., devient un nouveau vice-président. Le docteur Le Roy M. Ennis, de Philadelphie, ancien président de l'A.D.A., fut réélu comme vice-président. Le docteur G. H. Leatherman, de Londres, fut réélu secrétaire général et le docteur W. Riis Klansen, de Copenhague fut élu assistant-secrétaire. Ont aussi été réélus, le docteur W. Stewart Ross, de Londres, président du Conseil, le docteur H. H. Stones de Liverpool, rédacteur-en-chef, le docteur J. Stork, d'Aerdenhout, Hollande, trésorier honoraire, et Mlle Dorothy E. Parrot, de Londres, assistante-trésorière.

Le docteur Donald Smith nommé au Sénat

Le premier ministre St-Laurent a annoncé, le 26 juillet 1955, la nomination au Sénat du docteur Donald Smith. Le docteur Smith est le premier dentiste à être nommé au Sénat. Il fit ses études à l'Université Dalhousie et il obtient ses doctorat en 1928 et depuis ce temps, il exerce à Liverpool, N.-E. Avant la dernière élection, le docteur Smith représentait son comté à la Chambre des Communes.

XXIX réunion des journées dentaires internationales de Paris

Les membres de l'Association dentaire canadienne sont cordialement invités à assister au 39e congrès des journées dentaires de Paris, qui auront lieu du 21 au 27 novembre 1955.

Nouvelles acquisitions de la bibliothèque

- AMERICAN PUBLIC HEALTH ASSOCIATION: Nutrition practices: a guide for Public Health Administrators. 1955. 72 pp. illus.
- BERNIER, J. L. The management of oral disease: 1955. 825 pp. illus.
- BEST, C. H., & TAYLOR, N. B.: The physiological basis of medical practice. 1955. 1357 pp. illus.
- BRAUER, JOHN C.: The dental assistant. 1955. 398 pp. illus.
- CARNAHAN, C. W.: The dentist and the law. 1955. 263 pp.
- CLARK, H. B.: Practical oral surgery. 1955. 392 pp. illus.
- KRONFELD, R.: Histopathology of the teeth. 4th ed. rev. and enl. and Edited by Dr. P. E. Boyle. 1955. 535 pp. illus.
- WIENMANN, J. P., & SICHER, H.: Bone and bones; fundamentals of bone biology. 1955. 508 pp. illus.

XXIXèmes JOURNEES DENTAIRES INTERNATIONALES DE PARIS

du 21 au 27 novembre 1955

MAISON DE LA CHIMIE, PARIS

I.—Le programme de travail est dès à présent arrêté:

A/ CONFERENCES

Il est réparti en 9 séances, chacune d'entre elles étant consacrée à l'une des grandes divisions de la spécialité, à savoir:

- Dentisterie opératoire
- Prothèse fixe
- Prothèse amovible partielle
- Prothèse amovible complète
- Dentisterie infantile et orthodontie
- Céramique
- Alimentation moderne et carie dentaire
- Chirurgie bucco-dentaire et maxillo-faciale
- Organisation professionnelle

Les présidents de séance ont déjà été pressentis et procèdent actuellement à l'établissement du programme.

Chaque séance comportera:

1°) Une introduction générale en 2 ou 3 communications d'une durée de 20 à 30 minutes chacune, au maximum. Elles porteront sur les sujets les plus actuels dans la branche choisie, viseront surtout à en présenter les aspects pratiques et seront faites par des confrères d'une compétence indiscutable en la matière.

2°) Une très longue discussion (une heure et demie environ) où de très nombreux confrères pourront prendre la parole pendant 5 à 10 minutes environ chacun pour faire valoir leur point de vue sur le sujet traité ou présenter leurs idées sur une question s'y rapportant.

Il est recommandé aux confrères qui désireraient participer à ces discussions de se faire inscrire à l'avance afin que leur nom et le sujet de leur intervention puissent figurer sur le programme.

B/ TABLES-CLINIQUES

Il leur sera donné, cette année, une très grande importance. Elles se tiendront trois fois au cours de la semaine, de 17 h. à 19 h. et toute la journée du dimanche. Un dispositif spécial permettra aux confrères participants de les suivre avec le maximum de confort et de profit.

II—LES FESTIVITES sont en bonne voie d'organisation. Comme chaque année, l'accès de la plupart d'entre elles sera limité à un certain nombre de participants. Dès à présent les places peuvent être retenues pour le Banquet (Samedi 26 Novembre au soir).

Le prix de la carte de congressiste a été fixé à Frs 2.000, à Frs 1.000 pour les personnes accompagnant les congressistes, et à Frs 500 pour les étudiants.

Il est vivement recommandé de s'inscrire dès maintenant.

Les confrères désirant présenter des tables-cliniques (procédés nouveaux et originaux, tours de mains, etc . . .) sont instamment priés de se mettre en rapport, le plus rapidement possible, avec le Secrétaire Général afin que leur nom puisse figurer dans le programme provisoire qui doit être imprimé incessamment.

Pour tous renseignements, écrire au Secrétaire Général, T. DUBOIS,
60, Avenue Victor Hugo, PARIS (16°)

Notions sur la biopsie

par JEAN FONTAINE, D.D.S., et GERARD de MONTIGNY, D.D.S., Montréal

1) Définition:

Examen qui consiste à prélever un spécimen de tissu vivant pour en connaître la structure histologique. Cet examen se pratique généralement pour une lésion néoplasique en vue d'un diagnostic précis et d'un pronostic sûr.

Par cet examen, on peut aussi suivre l'évolution d'une lésion en prélevant périodiquement des spécimens. En prélevant un fragment de tissu, on peut:

- 1) exciser totalement la lésion
- 2) exciser une partie de l'excroissance
- 3) exciser une partie de l'excroissance et une partie de tissu sain.

2) Genre d'examen:

La biopsie est surtout un examen de laboratoire accompli par un anatomo-pathologiste, qui, à l'aide de techniques précises, peut, au microscope, identifier les types des cellules en cause et leur organisation histologique.

Le dentiste prélève le fragment de tissu et le fait parvenir au pathologiste.

3) Indications pour une biopsie:

a) quand le dentiste décèle, au cours de son examen clinique et radiologique, une lésion anormale des tissus durs ou des tissus mous de la cavité buccale; b) quand le dentiste, après un traitement indiqué, constate qu'une lésion ne guérit pas dans une limite de temps raisonnable; c) quand le dentiste soupçonne la présence d'une lésion tumorale à cause des symptômes qui l'accompagnent.

4) Procédure recommandée:

a) Description de la lésion:

Chaque spécimen envoyé au pathologiste pour examen histopathologique doit être accompagné d'une description complète de la lésion et d'une histoire clinique adéquate.

Cette histoire de cas doit comprendre:

I) Localisation de la tumeur: le site exact de la lésion, selon les points de

repère anatomique de la bouche. Un diagramme peut parfois être très utile.

II) Volume de la tumeur: les trois dimensions d'une lésion—longueur, épaisseur, hauteur—peuvent être mesurées en millimètres pour une petite lésion et en centimètres pour une plus grosse.

III) Couleur: faire une comparaison avec les tissus normaux.

IV) Forme: le contour précis et la nature de la surface de la lésion doivent être notés.

V) Base: le genre d'attachement de la tumeur aux tissus sous-jacents (pédicule, base plus considérable que la tumeur elle-même, etc.) doit être décrit.

VI) Consistance: dure, molle, fibreuse, etc. On s'assure de cette consistance par la palpation et en la comparant avec celle des tissus voisins.

VII) Mobilité: se trouve par la palpation.

VIII) Caractères secondaires: signes d'inflammation, hémorragie, nécrose, ulcération.

b) Histoire de cas:

Après la description des caractéristiques physiques, on procède à l'histoire clinique de la lésion.

I) Durée: période de temps écoulée entre la découverte de la lésion par le patient et l'examen actuel.

II) Evolution: noter les changements survenus au cours du développement de la lésion.

III) Symptômes subjectifs: douleur, malaise, perte de poids, d'appétit, etc.

IV) Traitements antérieurs: médical, chirurgical, radiothérapique.

V) Autres néoplasmes: recherche pour déceler d'autres tumeurs dans des régions parfois éloignées de la lésion buccale, re: métastase.

VI) Métastases: noter, par palpation,

la présence d'adénopathie, c'est-à-dire, gonflements des ganglions lymphatiques, cervicaux et sous-axillaires.

VII) Facteurs étiologiques: il faut noter tout facteur étiologique possible, tel que traumatisme, sources d'irritation, etc. (obturations, prothèses, occlusion).

VIII) Age, nationalité, état de santé, sexe.

IX) Description des symptômes radiologiques, quand des radiographies peuvent fournir des renseignements au sujet de la lésion.

c) *Prélèvement du fragment:*

Il y a plusieurs méthodes recommandées pour prélever une biopsie dans toutes les parties du corps, mais, dans la cavité buccale, la méthode la plus facile consiste dans l'excision d'un fragment de tissus à l'aide d'un bistouri, s'il s'agit de tissu mou, et à l'aide de ciseaux, s'il s'agit de tissu dur.

Un principe essentiel pour obtenir un spécimen parfait exige que ce fragment ne soit pas mutilé; il faut donc utiliser un bistouri tranchant et une pince lisse (sans stries).

Il s'agit d'inciser autour de la zone choisie, de soulever délicatement le fragment et de couper la base; parfois, il sera possible de se servir de sutures au lieu de la pince.

Cette intervention se fait généralement sous anesthésie locale; il faudra injecter la solution anesthésique autour de la lésion (anesthésie en bague) et non dans la lésion, car la pression du liquide peut déformer les cellules intéressées. Il est bon aussi, de prélever une partie du tissu sain pour que le pathologiste puisse comparer ce tissu sain avec le tissu malade. Le fragment prélevé n'a pas à être d'un volume considérable.

Le spécimen doit être fixé immédiatement; il faut le déposer dans une bouteille à grande ouverture contenant au moins 20 fois le volume du spécimen d'une solution de formaline à 10% ou d'une solution de Bouin.

Ne jamais envoyer au pathologiste un spécimen qui aura été prélevé au cautère,

car un spécimen cautérisé ne peut pas être examiné convenablement au microscope.

5) *Précautions:*

1—Ne pas attendre: faire parvenir au plus tôt le spécimen au pathologiste, surtout si l'on croit être en présence d'un cancer.

2—Préparer une bonne histoire de cas pour accompagner le spécimen.

3—Soumettre les radiographies lorsqu'elles ont une valeur de diagnostic.

4—Enlever le tissu malade au complet avec une partie de tissu normal, autant que possible.

5—Si l'on ne prélève qu'une partie de la lésion, il faut être certain qu'une partie du tissu sain adjacent est inclus.

6—Ne pas employer des désinfectants colorés pour l'aseptie de la muqueuse—employer 70% d'alcool.

7—Ne pas injecter la solution anesthésique directement dans le spécimen.

8—Ne pas employer de pinces striées; mais pinces lisses ou ligatures.

9—Employer un bistouri coupant pour enlever le spécimen.

10—Si vous devez cautériser, obtenez le spécimen en le coupant avant de faire la cautérisation.

11—Employer des bouteilles à large goulot.

12—Employer un grand volume de fixateur.

13—Employer 10% de formaline (4% formaldéhyde) ou solution de Bouin.

14—Bien emballer le spécimen pour prévenir le bris: des bouteilles en plastique sont préférables pour le transport.

15—Bien identifier chaque spécimen sur la bouteille.

16—Informez le pathologiste si le spécimen est du matériel calcifié ou se compose de corps étrangers.

6) *L'examen histopathologique proprement dit:*

Lorsque le pathologiste reçoit le spécimen, il prépare immédiatement le tissu

pour l'examen microscopique. Le spécimen est souvent divisé en deux, de façon à le couper dans deux directions à la fois.

La plupart des tissus sont enrobés dans la paraffine et sectionnés à 10 microns avec le microtome rotatif. D'autres spécimens, tels que ceux contenant des dents ou de l'os, sont d'abord décalcifiés dans de l'alcool acide ou par des méthodes électriques nouvelles. Ces spécimens sont souvent enrobés dans la celloidine. Cela prend plus de temps.

—Après que les sections sont montées sur plaques de verre, elles sont colorées.

—Le pathologiste, ordinairement, commence par un rapport histologique: c'est-à-dire, il fait une liste des tissus rencontrés sur la plaque. Ensuite, il décrit toutes les déviations à l'apparence normale des tissus; enfin, il soumet son diagnostic. —Quelquefois, un seul spécimen n'est pas suffisant. Il faut alors en prélever d'autres.

N.B. Il faut toujours se rappeler que la meilleure façon de guérir des patients atteints de cancer repose sur un diagnostic et un traitement précoces.

Université de Montréal

Acquisitions récentes en histologie dentaire normale et pathologique

par H. EULER

Cet article comporte un rapport sur les résultats récemment obtenus en matière d'histologie et histopathologie dentaire, rapport ne visant que les travaux publiés en langue allemande. Les résultats obtenus grâce au microscope électronique constituent une part importante de ces travaux: ils apportent, en particulier, la preuve d'un système organique de l'émail et d'une structure plus fine des odontoblastes.

En matière d'histopathologie, il est établi que la structure des tissus fins de la dent subit l'influence du régime alimentaire au cours du développement de la dent. Les investigations histologiques sur l'émail ont été des résultats remarquables en ce qui concerne l'incidence de la carie.

L'étude histologique du coiffage direct et indirect de la pulpe a été pratiquée avec grand soin. Les résultats concernant le coiffage indirect sont contradictoires. Ils semblaient les plus satisfaisants avec l'hydroxyde de calcium alors que les matériaux renfermant du fluor ou certaines autres substances chimiques se révélaient nocifs. Les meilleurs résultats obtenus par la méthode direct était dus à l'emploi du Calxyl.

Sur le plan histopathologie des lésions périapicales, les différentes méthodes de traitement radiculaire ont été soumises à des contrôles histologiques avec des résultats partiellement satisfaisants.

Enfin, l'attache épithéliale a été examinée par rapport à la parodontite et il a été établi une différence entre troubles parodontaux simples (parodontite simple) et troubles parodontaux complexes (parodontite complexe ou parodontose). (*International Dental Journal*, vol. 4, N° 6, décembre 1954, p. 789).

Au sujet de l'action bactériostatique de la salive et de la muqueuse de la cavité buccale

par E. SCHLANDER et M. HUSSAREK

Dans cette ère des antibiotiques, il est cependant justifié de faire, de temps à autre, une étude sur les processus de défense naturelle de l'organisme.

Les auteurs ont effectué des recherches sur le comportement de la salive vis-à-vis des bactéries et exposé les différents points de vue qui ont été adoptés à ce sujet au cours des dernières décades.

En conclusion de ce travail, les auteurs estiment qu'il s'agit là, pour intéressante que soit la question, d'une étude sur la modalité d'action d'un ferment, plutôt que d'un problème essentiellement bactériologique. (*Wiener Klinische Wochenschrift*, Vienne, septembre 1954, pp. 642-645).

Les tumeurs malignes et leurs rapports avec le système dentaire

par U. SARAVAL

La carcinome occupe la première place parmi les tumeurs malignes de la cavité buccale. Son diagnostic doit être posé dès le début de sa formation si l'on veut le traiter avec de bons résultats. Le spécialiste le mieux placé pour déceler les tumeurs et ulcérations buccales est le Dentiste, à condition qu'il examine à fond la bouche entière de chaque patient. Un examen minutieux peut révéler un carcinome à ses débuts, souvent ignoré du patient lui-même à qu'il n'occasionne ni douleur, ni autres symptômes avertisseurs. Le Dentiste doit être familiarisé avec les caractéristiques des tumeurs malignes de la cavité buccale et chaque fois qu'il rencontre des tissus ulcéreux ou hyperplasiques ne guérissant pas rapidement, son premier soupçon doit se porter sur le cancer. Sans alarmer le patient, ni utiliser de médicament ou de traitement susceptible de propager le cancer aux tissus sains, il doit pratiquer ou faire pratiquer une biopsie.

L'auteur a illustré (1) les détails de l'examen de la bouche, (2) la technique de la biopsie, (3) les caractéristiques du sarcome et du carcinome buccal dans leurs diverses localisations et leurs symptômes respectifs.

D'après les travaux récents, on peut affirmer (1) que le soi-disant épulis sarcomateux n'est pas une tumeur maligne, (2) que la leucoplasie non ulcéreuse, qui doit être tenue en observation mais non irritée avec des médicaments n'est pas une lésion précancéreuse, (3) qu'il n'y a pas relation de cause à effet entre le port d'appareils de prothèse et le cancer buccal. (*International Dental Journal*, Vol. 4, N° 6, décembre 1954, p. 803).

Traitement de la pulpe des dents temporaires

par G.-W. TEUSCHER

1. L'histologie et la morphologie des dents temporaires sont étudiées du point de vue de la réaction pulpaire à l'irritation.

2. Chaque cas individuel doit être soigneusement et judicieusement étudié et doit recevoir le traitement le plus approprié.

3. Le coiffage pulpaire des dents temporaires n'est couronné de succès qu'exécuté par un petit nombre d'opérateurs.

4. Les techniques de pulpotomie vivante utilisant l'hydroxyde de calcium sont répandues à présent et, apparemment, donnent de bons résultats.

5. La pulpectomie peut être pratiquée avec succès sur des dents temporaires, mêmes atteintes de désordres périapicaux si le cas est soigneusement choisi.

6. Il est nécessaire d'instruire les parents si l'on désire que les Dentistes aient une chance d'utiliser les techniques intéressantes destinées à sauver les dents temporaires dont la pulpe est à nu. (*International Dental Journal*, Vol. 4, N° 6, décembre 1954, p. 821).

Le syndrome de Sjögren dans la clientèle de médecine générale

par W. ACHENBACH et G. STOLLBERG

Les auteurs présentent le syndrome de Sjögren en se basant sur les observations de six cas personnels et appelant l'attention des praticiens sur l'existence de cette affection qui est loin d'être rare. Beaucoup de cas résistants aux traitements et peu nets, avec sensation persistante de brûlures de la langue, tels qu'il en a été rapporté récemment dans un compte rendu de médecine d'assurances sociales, seraient des cas de Sjögren pauvres en symptomatologie. (*Deutsche Medizinische Wochenschrift*, N° 47, 19/11/54, pp. 1745-1748).

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The fluoridation of drinking water

by D. B. WILLIAMS, Brantford, Ont.*

INTRODUCTION

It has always been a source of surprise to the writer to realize how little the general public know about the operation of the average water works and generally the dentist has been no exception. Possibly this is because we have long taken water for granted and to some extent because, for engineering reasons, the average water works is far removed from Main Street. Now we are finding that the water works is fast becoming a topic of discussion at the bridge table, the club or where you will. If we have listened in some directions we are told that tons of a deadly poison are being shovelled into an otherwise pure water and that it is even possible that subversive elements could enter the plant, gain

control of the operation, and thereby destroy the public to the benefit of some distant enemy.

The water works profession is a very ancient one dating back long before Rome, Carthage and Babylon and indeed its considerations are such that it has always been the deciding factor as to where such cities and all of our later ones could exist. Originally the purpose of this profession was the service of providing abundant water for domestic and other uses. This purpose continues but since the advent of filtration, chlorination and other disinfection procedures the water works profession has been marching side by side with preventive medicine in that its main concern has been the prevention of water-borne disease.

* This paper was prepared at the request of the editor. Mr. Williams has been in charge of purification at the Brantford Public Utilities Filtration Plant since 1947 and has been associated with the analysis and treatment of waters for 25 years. He is a member of the American Water Works Association, Canadian Section, and is a member of that Association's Committee on "Fluoridation: Methods and Materials" since its formation soon after the commencement of municipal water fluoridation.—Editor.

Arriving much later on the scene, fluoridation is just one more step in serving the health of the public via water. It is the direct result of exhaustive dental and medical research and the convincing of the water works profession by medical and dental authorities that the public can better be served by the controlled addition of limited amounts of fluorine to drinking water deficient in that element. Due to the rantings of the few alarming the many, fluoridation has resulted in a very ancient service becoming in the eyes of the misinformed a monstrous machine for destruction rather than a basic support to good public health and even now some are beginning to wonder with misgiving about those other necessary operations in water works practice.

The Canadian dentist will frequently be answering his patient's questions regarding the dental and medical side of fluoridation and may often wish that he could better answer questions concerning the water works aspect of this subject, therefore the sole purpose of this paper is to assist the dentist in this latter regard. If it does this in only one instance it will have justified the effort.

HISTORICAL BACKGROUND

Recently when speaking to a water works group the writer likened fluoridation to a new member being initiated into a much older group of established methods in municipal water works practice. For example the use of powdered activated carbon to remove tastes and odours started some 25 years ago but we must recall that its ancestor crude charcoal was used for this same purpose 3,000 years ago in Egypt. Chlorination with its attendant procedure of dechlorination is a half century old. Settling and filtration are lost in antiquity and even chemical coagulation by means of aluminum sulphate is said to have been employed some 6,000 years ago in China.

Fluoridation as applied in water works practice is now just ten years old. Small wonder then at the intense interest shown

in this new subject, the hundreds of questions, groups who are for or against and the many misunderstandings. It is true that applied fluoridation in water works practice is a ten-year-old youngster but fluoridation has been going on in varying degrees in various parts of the world ever since the congealed rocks were sufficiently cooled to permit the condensed vapours of the atmosphere to run over or through them. This primeval process of fluorides being added to water goes on today and thus we find areas in the world where the fluoride content is only a few tenths of a part per million, other places where it is one part per million or very close to it, and still other places in, notably, Missouri and Texas where the fluoride content ranges from 3 to 10 parts per million. Climax, Colorado, has a fluoride content in the water supply of 35 parts per million. Stratford, Ontario, has approximately 1.4 parts per million and has become a base line from which medical and dental personnel in Canada are able to draw conclusions. Aurora, Illinois, at one part per million serves the same purpose in the U.S.A.

Natural fluoridation in varying degrees had therefore always been with us but as in the case of most natural phenomena it was required to be discovered. Dr. Frederick McKay, a dentist, of Colorado Springs, became interested in a phenomenon now known as mottled enamel as early as the turn of the century. In 1925 a paper by him indicated that when mottled enamel was found the incidence of dental caries was much lower. Finally there was a small village in which all of the teeth of all of the children were black. McKay, called as a consultant, advised the village to obtain a new source of water, not always easy to do. Eventually a private well was found at the outskirts of the village and the children of the owner of the well had white teeth. A \$35,000.00 bond issue was arranged to purchase the well and to install a pump. The village authorities also arranged for

McKay to return at the end of ten years to examine the children's teeth.

At the end of 8 years he could no longer contain himself—he had to go back. His friends told him to keep his car ready in case he met with failure and was hounded out of town, since after all \$35,000.00 is a fabulous sum to a very small village. With great fear and trepidation McKay entered the school which contained a new group of children brought up on the new water supply. He found as he had predicted that all of the teeth were white. However, he found something else, he found that in giving them white teeth he had given them mouthfuls of decay.

Apparently McKay realized or at least suspected that the presence or absence of fluorides had much to do with the presence or absence of mottled enamel and tooth decay.

Finally in 1939 Dr. Dean and co-workers of the United States Public Health Service started a complete survey of the mineral constituents of all the water supplies in the USA as related to tooth decay. The report handed down in 1942 left no doubt of the important role of fluorides in drinking water as related to tooth decay and mottled enamel.

They found that when the fluoride content of the water was appreciably less than one part per million mottled enamel was absent but tooth decay was rampant. Between 1.0 and 1.5 parts per million fluoride it was found that mottled enamel would be so light as to be very difficult to detect by an expert but that the tooth decay was remarkably reduced. About 1.5 parts per million the incidence of tooth decay was still just as low but the adverse effect of mottled enamel came into prominence.

The United States Public Health Service recommended the application of fluorine to water lacking in that element to the extent of the limits found by their investigations—1.0 to 1.5 parts per million. It is of interest to note that where the fluoride content is in excess of the limits

suggested they have recommended its partial removal.

Three cities immediately took up this recommendation under various sponsorships: Newburgh, N.Y., sponsored by the New York State Department of Health; Grand Rapids, Mich., sponsored by the United States Public Health Service, The Michigan State Department of Health, City Health Department, and the University of Michigan; and Brantford, Ontario, sponsored by Dr. W. L. Hutton, the Medical Officer of Health. Only a few weeks elapsed between the start of fluoridation at these three localities so we can now say that artificial fluoridation is now ten years old. More than 1070 communities in the USA and Canada are now fluoridating their water supplies.

NATURAL VERSUS ARTIFICIAL FLUORIDATION:

A very considerable argument has grown up over natural versus artificial fluoridation. There are those who feel that fluorine applied by nature is present in a different form than in the case of fluorine applied by man. Anti-fluoridationists use this as one of their main arguments, an argument which loses its punch when its own proponents fail to be able to disclose in what form fluorine is present naturally in water. No one knows in what form fluoride is present in natural waters, whether it is there as Sodium fluoride, Calcium fluoride, Magnesium fluoride, and so on.

There is a simple reason for this lack of knowledge of the form that fluoride exists in water and that is that the fluorine content is generally so small as compared to the other naturally occurring mineral constituents that it is difficult to say to which particular one it is bound up to. For example let us assume that a natural ground water has one part per million fluorine. Such ground waters generally run some 400 to 800 parts per million of other minerals which generally are Calcium carbonate, Calcium bicarbonate, Magnesium bicarbonate, Calcium sulphate, Magnesium sulphate, Sodium

sulphate, Sodium chloride and traces of Silica and Iron. Any analyst will readily tell you the amounts of the various metals present such as calcium, magnesium, sodium, etc., and will just as readily tell you the amounts of the acid radicals present such as bicarbonate, carbonate, sulphate and chloride.

But they cannot tell you exactly how these metals and radicals are bound together. At best all they can do is to give you an empirical formula. For example any calcium is generally considered as being bound up with the bicarbonate. Any bicarbonate remaining is allotted to the magnesium. On the other hand if we lack bicarbonate and there is some calcium left over it is allotted to the sulphate radical. Finally, if we are left with an excess of magnesium and sulphate these two are placed together as magnesium sulphate and then, finally, if we have an excess of sulphate radical it is allotted to the sodium as sodium sulphate.

There is a definite rule to follow in allotting these various metals to the various radicals which in theory is simple. In practice, however, one always ends up with a few dog tags with no dogs to which to attach them. This still does not destroy the practical usefulness of such an empirical analysis for certain purposes. The lack of adjustment between dog tags and dogs is not too serious at levels of 400 to 800 parts per million but when we come down to one part per million fluoride ion no one can definitely state to which metal star the fluoride ion has hitched its wagon. It may be calcium fluoride, sodium fluoride, potassium fluoride, magnesium fluoride or a complex calcium silicofluoride or sodium silicofluoride—who knows? It serves no useful purpose to evaporate the water and to attempt various types of analysis on the remaining crystals since during the departing of the water entirely different metal-radical alliances will take place.

This entire dilemma is swept away when it is realized that even in a highly mineralized water such as 400 to 800 parts

per million the dilution is so great that we do not have complete molecules existing but rather the metals and radicals exist in ionic form. Thus rather than calcium bicarbonate we will have free calcium ions and free bicarbonate ions and so it is for all the other metals and radicals including the fluoride ion.

Therefore at the degree of dilution found in natural or artificial fluoridation the fluoride ion is free and it does not matter if it originally came from a calcium fluoride complex in some rock or if it has been added as sodium fluoride or sodium silicofluoride at a water works. No one has been able to tell the difference, not even the most rabid anti-fluoridationist. It is one of the immutable laws of our Creator that a free fluorine ion from one source can only be identical with a fluorine ion from any other source.

PRIOR INVESTIGATION:

Many will indicate that fluoridation has been rushed upon us with little or no investigation. Cox and Ast of the New York State Department of Health in this regard state:

"There is perhaps no health technique which has had as intensive and comprehensive study prior to its general application as water fluoridation. A review of the newer public health practices and therapeutic uses of new drugs reveals no such study, especially on human beings, before they were recommended for general application."

In this respect you will recall how readily we accepted penicillin and the entire group of sulpha drugs.

In investigating fluoridation we must realize that the United States Public Health Service had a perfect arrangement made to order which had not existed in the case of other health advances. When vaccination was introduced there was no back log of case histories. The same applied in the case of diphtheria toxoid, the use of certain anaesthetics, the new antibiotics and so on. The fact that these materials and techniques had been

used successfully on animals still left us with the fact that there must come a time when they are first tried on human beings. This was not the case with fluoridation since the United States Public Health Service were in the position of having whole communities living several generations on their particular water supply and these water supplies varied all the way from zero fluoride content up to 35 parts per million at Climax, Colorado. All they had to do was to analyze the waters for fluoride and to examine the teeth of permanent resident children (migrant families are ruled out) and there they had their story.

The fact that they had these communities at various fluoride levels exhibiting varied dental health conditions was the crux of the whole subject, very much overlooked at this time some ten years later—it is as though the discoverer of smallpox vaccine wishing to try it on humans, first had the opportunity of visiting some other planet where vaccination had been in use for some generations.

The United States Public Health Service did, of course, do more than just check fluoride content and examine teeth. They made exhaustive investigations of all possibly related subjects—waters high in calcium versus waters low in calcium, naturally soft versus hard waters, artificially softened versus hard waters, high magnesium versus low magnesium, slightly alkaline versus slightly acid and so on down a seemingly endless list. None of these other factors matters,—the answer always came up fluoride and always in the range of 1.0 to 1.5 parts per million.

The medical people of the leading countries of the world carefully record the number and causes of all deaths. The United States Public Health Service was able to compare this information from all the communities in the U.S.A. with known fluoride content of the water supplies and in addition were able to draw on similar information from some of the other countries. From this information they were able to show that the presence or absence

of fluoride is of concern only to the teeth and has nothing whatever to do with other disorders such as cancer, heart ailments, poliomyelitis, hardening of the arteries and so on.

The result of this most exhaustive study in all medical history is that they have recommended that all drinking waters contain from 1.0 to 1.5 parts per million fluoride. If the water contains above that figure it should not be used or some of the fluoride should be removed or if possible it should be blended with a non fluoride water. If the water supply contains no fluoride, or less than the optimal amount they recommend the addition of fluoride to bring the fluoride content up to the optimum range.

Thus we have medical and dental recommendations that drinking waters should contain fluoride to the extent described.

WATER WORKS POLICY:

The foregoing history may make you feel that your writer is a pro-fluoridationist. As a water works man he is neither pro nor anti.

The American Water Works Association and its several sections and branches have adopted a strong policy which in essence states that it is perfectly in order for water works personnel to apply fluoridation at the recommended limits only after they have been duly instructed by the proper medical, dental and governing bodies, and then only after they are certain that the equipment, procedures and methods of control meet sound practice and have the full approval of the responsible authority.

No water works man initiates fluoridation on his own in any given dosage. In the various states and provinces the action usually first starts with the local Medical Officer of Health or his equivalent in company with local medical and dental societies. Interested civic groups are properly brought into the picture. Finally a proposal is brought before council which if accepted is passed

on to the Public Utilities Commission or its equal for action. Finally the Water Works receives very definite instructions to proceed. Even then the state board of health—in the case of Ontario, the Sanitary Engineering Department of the Provincial Department of Health—must pass on all phases of the subject and must give their written consent.

Incidentally, this official state or provincial department of health approval is just an extension of what has been in effect for a very long time. It may surprise some to learn that in water works practice, from commissioner down to operator, including engineering consultant, the water works man is not a free agent who can do just what he pleases in regard to the various chemical treatments, plant design, plant capacity, source of raw water and so on. Any changes in all of these regards must have the approval of the state or provincial authority.

As a water works man I applaud this protective procedure, have always found it more of a help than a hindrance and am glad that it has been extended to govern fluoridation. I believe that such governmental action is for the common good. I do, however, deplore the trend in some localities on this continent and in this country where we find that medical matters are being put to a franchise to be decided by the butcher, the baker and the candlestick maker. One is prompted to ask if we are approaching the time when the truck driver and the high school teacher will tell the surgeon how to operate and the girl in the 15-cent store will join forces with the bank director to tell you dentists what type of treatment is required in the case of your various patients. Putting it another way, as a dentist would you feel justified in telling the engineers what type of bridge to build?

THE CHEMICALS IN USE:

When fluoridation was first started sodium fluoride was the chemical recommended. It was the most readily available, was reasonably soluble and was in a rea-

sonable price range. Today the list includes four available and suitable chemicals—sodium fluoride, sodium silicofluoride, hydrofluoric acid, hydrofluosilicic acid. Ammonium silicofluoride has been approved for use in New York State, but since it contains 19% ammonia there will be instances where this material would be quite compatible with chlorination practice but in other cases where chlorination practice is of a different nature its use would be seriously detrimental to the process. Sodium monofluorophosphate was briefly mentioned in 1951 and nothing further of interest has come to light.

Unlike chlorine, fluorine gas in its uncombined state cannot be used since it enters into unpredictable explosive reactions in water, is far more corrosive than chlorine and other technical and cost considerations place it out of the question.

Hydrofluoric acid is in use at Madison, Wisconsin due to the unusual engineering aspects of the multiple well supply in that city. The acid is fed in controlled amounts to the flow of water by the controlled displacement of the acid from its container by mineral oil. Highly specialized design was required in the case of Madison since some of the stations do not have personnel constantly in attendance. It is a highly hazardous substance and its use is not recommended except in unusual circumstances such as at Madison.

Hydrofluosilicic acid has come into some prominence due to its application at the 200 mgd. plant at Baltimore, Maryland. The glowing accounts of its economy are rather misleading. It is the least expensive chemical if water works and manufacturer are in the same town as is the case of Baltimore, where we find that the Baltimore water works does its own trucking in its own rubber lined tank trucks. For cities not so fortunately placed the item of freight becomes out of proportion since the acid being of only 25% strength one pays freight on 75% water.

Ninety-nine per cent of existing fluoridation is being carried out by sodium flu-

oride and sodium silicofluoride. As of October 1st, 1955, the world fluoride market is most unsettled, and we may see major changes in the availability of the various fluorides which obviously affect choice in water works fluoridation.

Costs:

The cost of chemicals for fluoridation should not be compared on the basis of the price per pound for the entire chemical which would be most misleading. To arrive at the proper comparison one must take into consideration the percentage of fluorine in the molecule, the cost per pound of the element fluorine from that source, not forgetting freight charges, duties, etc.

Examples of the cost of the element fluorine from three different chemicals delivered at point of application at Brantford as of January, 1955 are as follows:

Sodium Fluoride: at 13.5 cents per pound including freight, 98% pure, having a fluorine content of 44.3% the element fluorine then costs us 30.6 cents per pound.

Hydrofluosilicic acid: of 30% strength, having a fluorine content of 24% would cost us 12 cents per pound delivered giving us a fluorine element cost of 50 cents per pound.

Sodium Silicofluoride: at 10.50 cents delivered, having 98% purity and having a fluorine content of some 60%, the element fluorine then costs us 17.8 cents per pound.

While discussing costs it is worth mentioning that fluoridation at Brantford with a water population of some 50,000 has ranged from an annual expenditure of \$4,400 to \$6,400, giving a per capita cost ranging from 11.0 to 17.0 cents per annum and is currently 12.9 cents. The reason for the wide variance is that originally we started with material of U.S. manufacture, with money exchange entering the picture. The material began to be made in Canada which reduced the price, and then the price on the Canadian material began to rise. The Aluminum

Co. at Arvida are ceasing to manufacture hence all fluoridation chemicals will require to be imported.

Obviously Sodium silicofluoride is the cheapest source of fluorine for fluoridation in Ontario. Why then has Brantford used Sodium fluoride for ten years? The answer is that we started on June 20, 1945 with sodium fluoride on a ten year health experiment and it is not good practice in the middle of an experiment to change any of the conditions. The silicofluoride was approved for use by the United States Public Health Service in 1950 and now that the medical and dental authorities have assured themselves that the Brantford experiment is in every way a success we have changed to the use of the silicofluoride in July of this year. We therefore expect to reduce fluoridation costs by half.

DOSAGE CALCULATION:

Sodium fluoride and sodium silicofluoride are both fine white powders having an appearance similar to icing sugar. The dosage required in the case of these two chemicals is arrived at in the following manner:

To produce one part per million of anything in water requires the addition of 10 pounds per million Imperial gallons. If we were applying pure fluorine gas we would then add 10 pounds of this gas per million gallons and we would have one part per million fluorine.

In Sodium Fluoride having the chemical formula NaF we find that the sodium has an atomic weight of 23, fluorine has an atomic weight of 19 with the entire molecule NaF weighing 42.

Therefore instead of just 10 lbs. per million gallons it requires

$42/19 \times 10 \text{ lbs.} = 22.1 \text{ lbs.}$ of 100% pure Sodium fluoride.

Since the commercial grade is approximately 98% pure we need $22.1 \times 100/98 = 22.4 \text{ lbs.}$ sodium fluoride per million gallons (Imp) to produce 1.0 ppm fluorine.

In the case of Sodium silicofluoride this

has the formula Na_2SiF_6 . The entire molecule weighs 188 but the six fluorine atoms weigh only 114.

Therefore we multiply our 10 lbs. by 188 over 114 to find 16.45 lbs. The commercial grade is also about 98% pure so $100/98 \times 16.45 = 16.8$ lbs. sodium silicofluoride per million imperial gallons to produce 1.0 parts per million fluorine.

THE ACTUAL APPLICATION:

Many technical visitors, who should know better, are greatly disappointed at the lack of glamour in the fluoridation operation at our plant. Apparently they expect to see great activity, a host of men dashing about, noise and flashing lights much as Hollywood would dream up for such an operation. Some non-technical visitors expect to see a gang of virtual slave labourers armed with shovels dumping prodigious quantities of the fluoride into the water. All that you will see is a small machine that you could put into the trunk of your car, slowly measuring out an average of 50 grams per minute, (just under 2 ounces per minute,) for a rate of flow of 6.5 millions of gallons (Imperial) per day.

Our machine operates on the following principle: the fluoride from an upper hopper moves down on to a constant speed revolving cylinder which by a wiping action causes a ribbon of fluoride to drop into a lower chamber where water in great turbulence is passing through the plant. The roller operates at a constant speed due to the constant speed of an electric motor—all of which cannot be changed except in the case of seasonal changes required in times of high summer pumpage by the changing of pulleys. The hour to hour and day to day operation obviously must be readily changed to meet variations in pumpage. The width of the ribbon of fluoride and therefore the grams of fluoride per minute are changed by a calibrated slide bar. At 7 mgd. the bar will be pulled way out to a predetermined setting and we will have a wide ribbon of fluoride and as night

comes on and it is necessary to partially close down operations to 4 millions of gallons per day the slide bar is moved into another predetermined setting and we have a much reduced ribbon of fluoride.

The calibration of the slide bar is done by actual weight checks. In addition the machine and hopper are on a set of scales which are checked hourly, also the total fluoride applied is checked against the total gallons of water treated during the 24 hours. The labour involved is small since the hopper requires filling once each 8 hour shift.

There are a number of other machines on the market varying widely in design and principle on which they operate—worm screw feed, moving belts and so on.

While artificial fluoridation is still fairly young the design and ancestry of the equipment used stems from similar and often identical machines used in water works practice for many years in the application of activated carbon, alum or other coagulants and lime. There is nothing new to the machinery employed.

BASIC REQUIREMENTS:

The application of fluorides differs very little from other chemical applications in water works practice. To convey the relative simplicity let us examine the requirements as related to prefluoridation practice:

- (1) We must be able to measure the flow rate and changes in flow rate of water passing through a chamber or pipe line. This is standard practice and is the reason for venturi meters, calibrated weirs, pitot tubes and the like. From long practice we know that these devices are used in the control of feeding of lime and other chemicals.

- (2) A machine is required to feed a dry powder at predetermined rates commensurate with the flows passing the point of application and such a machine to be either automatically or manually adjusted. We have already seen that such ma-

chines are available from previous practice.

(3) Accurate calibration of the fluoride machine is essential. The calibration of lime, carbon and alum machines is familiar practice but if there is any difference to fluoridation it is the requirement of much finer calibration. For example in feeding one gram of alum per Imperial Gallon we are feeding 14.3 parts per million and if we are one part per million high or low the results will not be greatly affected, however, we cannot be one part per million high or low when we are required to feed only one part per million of fluoride. The required accuracy is readily attainable.

(4) In many instances a solution pot to dissolve the dry chemical and a rubber hose to convey the solution to point of application are required. These are familiar requirements in the feeding of alum. At Brantford, since we are fortunate in being able to mount the machine directly over the clearwell where there is a large body of water under turbulence a solution pot and hose are not required.

(5) Feeding of fluorides to a pipe line under pressure, such as direct from wells where at no time is the water found in open chambers or channels is more involved and the equipment of a different type than you will find at Brantford.

In such cases a solution tank of known volume, scales to weigh material, an auxiliary water supply, an injector or proportioning pump, a flow measuring and controlling device and if conducted out of doors suitable housing of a vandal-proof nature become necessities. Insufficient turbulence may permit streamlining of the fluoride solution in the pipe line therefore a diffuser device at point of application appears necessary. Even in the case of well supplies fluoridation imposes no novelty since the equipment required is the same that has long been used in the application of Calgon and similar phosphates to allay corrosion and prevent deposition of iron and calcium.

Where a community is supplied from a

number of wells delivering directly to the mains in different areas it is advisable to equip each well location with its own feeding requirements rather than go to the expense of bringing all water to a central point for fluoridation.

From these remarks it may be seen that there is nothing new or earth shaking to the application of fluoridation but rather that it may be reduced to a simple specific statement:

"Fluoridation is a purely mechanical act of dissolving a known amount of a fluorine-containing chemical into a known volume of water and ensuring that it is uniformly distributed therein."

LACK OF REACTIVITY:

The possibility of chemical reactions taking place in which fluoride might adversely affect or enhance other chemical operations, particularly chlorination, has been the source of many enquiries. In answer, there is very little to tell since, with two minor exceptions, virtually nothing happens. By nature the fluorides are remarkably stable, and it is only under conditions of great chemical stress and fairly high concentration, such as we will never find in fluoridation, that the fluoride can be made to react.

In water works practice we have long been familiar with a number of chemical reactions. For example dry chlorine gas is put through a chlorinator with water and comes out and is applied as hypochlorous acid. This hypochlorous acid, depending on the amount and type of polluting substances present, will react with ammonia and other nitrogenous substances to produce monochloramine, dichloramine and nitrogen trichloride. Sulphur dioxide when put through a sulphonator with water emerges as sulphurous acid and is employed to react with and remove any excess of chlorine. Ammonia in many instances is purposely added to react with hypochlorous acid to form the chloramines. Alum reacts with the alkalinity and an aluminum hydroxide floc is thrown out of solution. Wherever

we look we see a chemical reaction taking place.

The fluorides do none of these things and if there is any novelty to fluoridation it is this lack of reactivity.

Therefore any fluoride applied at the water works will not affect the other chemical operations and it will remain in the water undiminished to the farthest ends of the system.

The two minor exceptions: When fluoride is applied prior to filtration very high alum doses during periods of high turbidity in flood periods will adsorb some of the fluoride. The answer here is to apply fluorides after filtration. In the case of a high concentration of fluoride in a solution pot in very hard water areas the conditions of concentration are such that some reaction does take place and some deposition of calcium fluoride will occur. Increasing the flow of water in the solution pot or dropping the fluoride directly into a large moving body of water overcomes this effect of high concentration.

The fact that, with the minor exceptions noted, fluoride is non reactive adds greatly to the simplicity of the whole operation.

In chlorination practice when it is required to have 0.5 parts per million chlorine present at the end of some elapsed time it will be necessary, dependant on the degree of pollution, to add often many times that amount knowing full well that chlorine diminishes due to reactions.

The fluoride not entering into such reactions does not diminish and if too much is put in too much will result and vice versa.

The prime necessity is to assure that the correct amount is being put in at all times. Even though the fluorides are chemicals this lack of reactivity removes it from being a chemical operation and places it in the class of being a purely mechanical engineering problem.

Therefore it is quite feasible for a water works to correctly carry out fluoridation without making any analysis for

fluoride. The only reason that we make the analysis for fluoride is to show proof that this purely mechanical operation has been correctly performed.

UNFOUNDED FEARS:

What of public danger? Isn't sodium fluoride a rat poison? Could your machine suddenly run wild and thus dump lethal amounts of fluoride into the water? Isn't this a perfect set-up for saboteurs who could enter the plant and turn the machine on full blast? These questions and many others coming in, in the thousands, indicate one thing—the fear of the unknown. Once a person has seen the application and has been appraised of a few simple facts the fear has gone. Let us answer these questions:

Could the machine run wild and thus dump lethal amounts of fluoride into the water? Very definitely not. As explained previously the roller operates at a definite speed, there can be no speeding up. The worst that can happen is a shutdown due to power failure. It is physically impossible for the contents of the hopper to dump past the roller either when it is moving or stationary. Even if by some remote possibility it did dump then only some 30 pounds, the capacity of the hopper, would be dumped. In this regard Cox and Ast of the New York State Board of Health have shown that it would take in excess of 4 tons per million Imperial gallons (which is 800 parts per million) to produce the earliest stages of nausea which is a long way short of a lethal dose.

What of public danger? The United States Public Health Service has abundantly shown that many people regularly drink water containing fluorides in the 5 parts per million range without harm to their health. The capacity of our machine is such that if it were permitted to run "hog-wild" it could not even approach such a figure.

Isn't fluoridation a perfect set up for saboteurs who could enter the plant and then turn on the machine full blast or just dump all the available fluoride into

the water all at once? This question is being widely asked in Toronto where apparently some people have strange ideas concerning the methods of saboteurs and even stranger ideas of the nature of water works operation. As previously pointed out the top capacity of the machine is such that if a saboteur did turn it on full blast he would be frustrated by lack of feed capacity. Supposing that he decided to dump the stock of fluoride into the water without using the machine. He would still require more than 4 tons per million gallons just to make people sick, not kill them and at a pumpage of 7 million gallons per day he would require in excess of 28 tons and he would have to keep this up.

Our present stock is somewhat less than 28 tons therefore our potential saboteur could not sneak in and do his dirty work at the point of a gun in 15 minutes but rather he would require to arrive with a large retinue of assistants, a considerable number of large transports loaded with fluoride, and be prepared to spend several days dumping in excess of 28 tons per day into the water just to make people feel ill — not kill them. Such activity could scarcely go unnoticed in our plant with two operators arriving each shift and a constant coming and going of management, superintendent, chemist, mechanic and others.

Isn't sodium fluoride a rat poison? In answering this we have the apparent paradox of strychnine being a deadly poison and yet we find physicians administering it to their patients. Another example, sodium chloride, common table salt, is a biological necessity and we become insane and then die if we do not receive enough of it, but in even greater quantities we use it as a condiment on foods at the table, and in still greater quantities it has long been a suicide instrument of choice in China.

As you readily perceive from these examples we cannot truthfully apply the epithet poison to any substance (or the term non-poisonous for that matter) un-

less we are prepared to state the concentration in which the substance is poisonous. Sodium fluoride to be a successful rat poison must be present to the extent of some 20,000 parts per million. At a concentration of one part per million fluorine in water, the fluoride is not present in sufficient concentration to be remotely considered a poison.

To merely make yourself ill, not to cause death, you would require to consume at one time 0.25 grams of sodium fluoride. To do this via water at 1 part per million fluorine would require you to drink in excess of 22 gallons of the fluoridated water. This would be required to be done all at once, an obvious impossibility, since fluorine is readily excreted from the body.

TASTES AND ODOURS:

In locations where tastes and odours are always absent from the water supply practical and laboratory experience have shown that the addition of 1.0 to 1.5 parts per million fluorine has no effect on taste and odour. Also in water supplies plagued by continuous or seasonal occurrences of tastes and odours, due to trade wastes, sewages, algae and the like, it has been abundantly shown that the addition of fluoride has not enhanced or depreciated the undesirable tastes and odours.

UNTOWARD EFFECTS IN DOMESTIC OR INDUSTRIAL OPERATION:

As a member of the American Water Works Association Committee on Fluoridation, Methods and Materials, the writer should tell you that close scrutiny in the over 1,000 communities now fluoridating has to date brought to light only one untoward effect and that was the manufacture of artificial ice at Charlotte, N.C., a condition which was readily corrected.

HOUSEHOLD SOFTENERS:

We have noticed no detectable loss in fluoride content when the city water is passed through household softeners of

the zeolite type employing either siliceous or organic medium. We conducted this investigation blind in cooperation with one of the leading plumbers. We checked the fluoride on a number of samples provided by the plumber and was not told until after we had completed the fluorine analysis the source of the various samples.

When writing or speaking for the benefit of water works, chemical or other engineering audiences the writer always discusses the work of the Federal Department of Health in comparing the condition of the teeth of the children at Stratford, Sarnia and Brantford. Also the writer generally reports on the dental findings of Dr. Linscott of Brantford and the findings in general of the members of the Brant County Medical Association. This is dispensed with on this occasion since it is believed that the Canadian dentist has already been fully appraised of these findings.

OTHER PREVENTIVE AND CURATIVE PROCEDURES:

The writer is often asked if fluoridation is the thin end of the wedge making way for a host of other chemicals and drugs to be applied via municipal water supplies for curative and preventive purposes. It is most unlikely that this will be the case. A new cure tomorrow may be black in colour and therefore unsuitable for water works application; costing several hundred dollars per ounce it would be out of the question on a cost basis; acid in nature it could readily corrode the pipes; organic in nature it could nullify the efficacy of chlorine and thereby create a danger; it might be of a nature to create tastes and odours; it may be of a nature that it would deteriorate in the presence of water; it might be desirable that it be inhaled or injected. The fluorides are unique in that they are compatible with water and water works chemical operations—such a con-

dition is unlikely to happen more than once or twice in many lifetimes and therefore the writer does not expect the chemical stockroom of the water works to become a glorified pharmacy.

BIG BUSINESS INFLUENCE:

Many of the anti-fluoridationists feel that big business is foisting fluorides on an unsuspecting public for the purpose of disposing of byproducts. Such is not the case. In twenty-five years of close association with the Canadian chemical industry the writer has not seen such apathy in Canada and the U.S.A. on the part of big business in selling fluorides to water works. There is a distinct shortage of fluoride chemicals in this world including the byproducts and the various manufacturers are more interested in keeping their large industrial consumers supplied rather than courting the attention of the water works field. Right now the water works man must put up considerable buying effort which is a long way from big business trying to shove something onto him.

PURE WATER:

There are some who are deeply concerned about the addition of a chemical to their otherwise "pure" water. The writer immediately raises the question—since when did any water works deliver a pure water? As a matter of fact pure water is never found in nature and only by diligent effort and great expense can one prepare small quantities of it in the laboratory.

The Grand River, quite apart from any pollution due to trade wastes, sewage, etc., contains some 400 parts per million of certain chemicals and they are calcium bicarbonate, magnesium bicarbonate, calcium sulphate, magnesium sulphate, sodium sulphate, sodium chloride, aluminum, iron and manganese to mention the principle ones. They are present due to the process of rain flowing over soil and rocks. They were there long before the Indians, long before the

white man and they will be there long after we have all vanished. These same chemicals are present in Lake Ontario (and the St. Lawrence River) but to a lesser extent and therefore they are also present in the Montreal-Toronto water. In Kitchener and Guelph the "pure" water from the wells that supply those towns contains even greater quantities than we find at Brantford; and in Toronto, Brantford, Kitchener and Guelph we find no attempt on the part of the water works or public health people to remove these chemicals. Even the very pure water from your home farm well of which you have nostalgic memories does indeed contain as much and often more of these chemicals. Hence we may stop speaking of pure water right now—if Montreal-Toronto put up a plant to deliver a water free of such chemicals and thus deliver a super distilled water it would make the war debts of several countries look silly by comparison.

Even so with 400 parts per million of these chemicals present we find that it represents only 0.04% of the entire water, a remarkable degree of purity when compared to many other products on the markets. Therefore the 1 part per million fluorine does look very small alongside the 400 parts per million of these water chemicals and we find that it represents 0.0001% of the entire water.

No water authority can attempt to give you a "chemically pure water" but they do incessantly work to make sure that the water you receive is a wholesome water—meaning not prejudicial to health—this is done by removing harmful bacteria, and therefore we say that we are delivering a "hygienically pure" water.

As a water works man the writer still holds to the policy of being neither pro nor anti-fluoridation but rather standing ready to serve the medical and dental authorities, the only ones qualified to decide, when they so order.

It was necessary for the writer to discuss some of the fears of the anti-groups since many of the statements of these ill-informed minority groups are erroneous and dangerous to more than one of the established professions. If he did require an excuse to discuss some of the unfounded fears of these groups it would be that he wanted you to have the complete concept and that he desired to set some the records straight.

In closing the writer again deplores ill-informed groups demanding the right to pass judgement on matters not within their sphere of knowledge.

The writer expresses his sincere appreciation for the opportunity of presenting, to such a distinguished group, one facet of water works operation based not on imagined fancy but known truth.

Millions on millions have perished without contributing to the progress of science; they have no history. Thousands have promoted at least the foundation of future knowledge, history records their names, for they labored. They summed up the past and discovered new and great truths, the intellectual products of many bygone factors of knowledge; they led humanity onward, and thus formed the landmarks of its history.

Johann Herman Baas.

The history of paedodontics in Canada

by EDWARD R. BILKEY, D.D.S., Toronto.

The science and art of healing had a beginning just as all things common to man have had their beginnings: man's changing appreciations coupled with his eagerness to learn and to improve, have resulted in what is known as progress. By his insatiable desire to explore the unknown, to experiment, and by experimenting to learn, man has improved both himself and the environment in which he lives. The basic factor common to all branches of science which has given us this desire for creative learning, is man's instinctive urge to live for the betterment and happiness of the human race.

One of these healing arts, devoted to the maintenance of sound oral health, became known as Dentistry. Men of the dental profession guided by these instinctive factors have woven a pattern of progress dotted with pitfalls, setbacks and errors, but with each new phase or stage leading towards a dental health programme for the ultimate benefit of mankind.

For years our profession has been faced with the problem of trying to treat and repair conditions which seemed to spread with the determination of a forest fire. In order to set about this task, dental scientists worked tirelessly to discover better materials and more efficacious techniques in order to enhance our abilities and make our treatment measures more durable. Yet, with all the present day achievements and advancements, came the realization that dental disease in defiance of these efforts, seemed, if anything, to be on the increase. Because total preventive procedures were as yet impossible, studies whereby dental disease could at least be better controlled, were undertaken.

From these investigations, much was learned about the benefits of adequate and timely mouth hygiene procedures.

Other studies were made to determine in what way or ways the diet could affect the forming dentition and later on, how the diet, if it contained certain food substances, could tend to destroy tooth tissue. All in all, many things were learned, that if utilized by our people would greatly lessen the rampage of dental disorders.

How could the people best learn these elementary preventive or protective measures? This was the question that members of the Canadian dental profession were asking themselves as early as 1925. At that time, a group of Canadian dentists banded together and formed what was called the Canadian Oral Hygiene Council. This was in actuality a lay organization with a sufficient number of dentists on its board to give dental contact. The main objective of the Canadian Oral Hygiene Council, a public health organization, was prevention — to impart to the public the scientific facts whereby dental disease could be controlled.

From the charter of the Council, it can be noted that a programme of Dental Health Education was instituted in every province in Canada and that each province seemed more eager than the last to learn these facts. At its inception, however, Ontario was the only province which was actually carrying on a dental health programme. Today, there is at least one item of expenditure for dental health appearing in the budget of nine of the provinces. Great must have been the satisfaction of these pioneers when letters were received from ministers of health, from educators, from health workers in every province, and from the Prime Minister himself, congratulating them on the merit and achievement of their great

and far-reaching dental health programme.

Twenty-two years later, in 1947, when the Council, as such disbanded, it did so in name only, for its accomplishments and endeavours were so widespread and profound that dental health education was now almost self-propelling by public demand.

All of the educational programmes had emphasized early preventive and treatment care, beginning as early in life as 2½ to 3 years of age. No longer could baby teeth be considered as a mere nuisance factor which sometimes interfered with adult dental needs. But alas, as a profession we were mired in the ever-multiplying demands of adult dentistry only to discover that the need was even greater and more demanding among the child population. Dentistry for Children had been in the past, in Canadian Dental Schools, barely more than those three words. Dentists who had been practising for many years realized now that their training in this phase of dentistry had left much, and in many cases, everything to be desired. They were eager to be trained in order to serve in this needy and challenging new field.

In 1947, the newly formed Division of Dental Services in the Federal Department of National Health and Welfare, solicited the services of Dr. S. A. MacGregor, who had in this same year been appointed as head of the newly formed Paedodontic Department of the Faculty of Dentistry, University of Toronto, to conduct at intervals across the Dominion, post-graduate courses in this specialty. During the years 1948-49 these refresher courses were carried on in nine out of ten provinces, and did much to supplement the recipients' knowledge with facts which had not been available in their undergraduate courses.

Dental schools were by no means lax in their appreciation of this new trend and after hours of juggling and rearranging timetables, established departments devoted solely to the teaching of den-

tistry for children. At least two Canadian dental colleges had such departments established as early as 1932 and 1936, but it is believed that even these earliest realists have enjoyed worthy and beneficial improvements, mainly in the last few years. The remaining three universities established their respective departments in about 1947.

The University of Montreal and the University of Toronto conduct short post-graduate courses yearly and the University of Toronto, as of 1951, has instituted a graduate course of ten months' duration, which if successfully completed will entitle the graduate to certification as a Paedodontist or child specialist in dentistry. (Course has now been temporarily discontinued.) At this time, Ontario is the only province which grants this certification and the first to receive this document was Dr. S. A. MacGregor, in December of 1947.

More and more graduates are seeking enrollment in these courses which emphasize early preventive care. New graduates, as a result of ever increasing and much needed teaching hours in this aspect of dentistry, are eagerly and capably shouldering their responsibilities to young patients. This is becoming more evident with each new graduating class and is made even more vivid by the fact that some have restricted their interests to Dentistry for Children, immediately following their establishment in practice.

It would be quite unjust to not, at least, mention the ever powerful influence of the American Dental Association and the American Society of Dentistry for Children. Their bountiful supply of literature on Dentistry for Children, which has generously divulged the knowledge of their many great dental teachers, has assisted us immensely and not without our gratitude.

In May of 1951, the Canadian Society of Dentistry for Children (Ontario Unit) had its inaugural meeting. Through further meetings and correspondence it is hoped that each province will associate a simi-

lar society with Ontario's in order to form a unified and fortified Canadian Society. Within the province and communities, small study groups have formed to investigate the complexities of Dentistry for Children. To each and every such society and teaching institution has been born the realization that Dentistry for Children is not to be feared but rather to be respected, for it is merely adult dentistry before the breakdown. It is a phase of dentistry which affords our health profession a strong means whereby we are permitted the opportunity to observe growth patterns, breakdown processes and the many changes, which, if understood, and dealt with early in

life, may do much to prevent replacement and repartive demands in adult years.

Looking back, it can be seen that Paedodontics, or Dentistry for Children, has already written several of its chapters, many of which are based on intangibles. With the blessings of the future upon it, the unwritten chapters will doubtless reveal intelligent, intimate integration and cooperative understanding of all preventive teaching departments, coupled with an ideally suited proportioning of undergraduate teaching hours, in order that Dentistry for Children will be strengthened to better serve the dental demands and needs of our Canadian children.

51 Eglinton Ave., East

PARABLE OF THE HEALERS

Now in a certain country there was a great guild of healers because this type of art appealed mightily to all the people. And it was said by some that this was the strongest union in the land. And it was a hard thing to enter the guild—for only the learned could apply and they worked the first eight years without pay, even as apprentices, and those who aspired to be master craftsmen worked a further five years for a pittance. Then if their work found favor they could labor as many hours as their strength allowed. And those whose names became noised abroad did make substantial contribution to the tax gatherer. But because of the tax laws and the style of living expected of their prestige as artists none of their estates were talked about in the market place.

Now it came to pass that certain politicians spoke to the people saying "Why should each man have to pay for his healing—let the state control the healers." And because many people hope for something for nothing, a law was passed. But behold, the matter turned out ill. For the healers, a proud guild, waxed exceeding wrath. "Have we not for many years worked for the poor for nought?" they said. "And does not the guild ensure sufficient treatment to all for a small monthly fee? And must we now be ground under the feet of servants of the state who know not our ways and are full of the insolence of office and the laws' delays and swollen with our substance?"

And the strongest and best of the healers shook the dust of that country from their feet and departed thence. And those who were left said to themselves "If we are to work for the state with no reward for merit we will work in the manner, and at the pace, and for the hours, of other servants of the state, and by Aesculapius we shall take our ease that our days may be longer in the land." And indeed the excellence of the work declined from that hour, but the parchments multiplied.

And the sons of the healers sought other work.

F.G.A.

Fistulous opening on palate from blow to upper anterior teeth

Case Report

by WM. J. SIMPSON, D.D.S., Niagara Falls, Ont.

A fifteen-year-old boy came to my office on May 4, 1955, complaining of a tender swelling on the palate, and his four upper anteriors were mobile and extremely tender to percussion. On examination, a fistulous opening was discovered in the midline of the palate about 25 millimeters behind the incisive papilla. A periapical x-ray was taken, showing an intact lamina dura, and no positive pathology. The fistula was incised, releasing considerable pus, and a gauze drain was inserted.

Questioning revealed that the patient had been struck in the mouth by a basketball about a month and a half before, with no discomfort or injury. Further questioning recalled a blow on the end of his bugle while he was playing the instrument, also without any undue discomfort. This accident also occurred about a month or so before.

Burton Vitalometer tests on May 4 gave the following readings:

- Upper right lateral—6
- Upper right central—6
- Upper left central—5
- Upper left lateral—8

On May 6 the fistula was clean and the patient was comfortable. All four upper anteriors reacted to vitality tests at 4 or 5.

The patient presented on May 10 with a stie in the lower left eyelid and with the left side of his nose swollen and tender. A possible connection with the original condition was considered. The teeth continued to improve, and it was decided to wait and see.

The patient reported for examination on May 12. The stie had broken, the swelling on the nose had disappeared, and the upper anteriors tested normal. Vitality tests on May 12, 21, July 5, still registered at 4 and 5, and all clinical symptoms had disappeared.

This case is presented because it is unusual. The only conclusion drawn was that the blows caused trauma to the deep structures, which in turn caused suppuration and pointing in the palate, without any permanent injury to the teeth. Possibly the blows were received with the teeth in occlusion, with a resultant splinting action on the teeth which were struck, and transmission of the shock to the palatal structures.



Recurrent unilateral dislocation of the left temporomandibular joint associated with rheumatoid arthritis of the right temporomandibular joint.

A Case Report

by THORPE B. VAN DE MARK, Toronto

The patient, a fifty-nine year old female, was first seen in the Oral Surgery Department at Geisinger Memorial Hospital and Foss Clinic on October 20th, 1953.

CHIEF COMPLAINT:

"Recurrent inability to close her mouth."

HISTORY OF PRESENT ILLNESS:

One week ago the patient suddenly found that her mouth was locked in the open position. She manipulated her mandible with her fingers for one and a half hours before she was able to get her mouth closed. Two days later she saw an osteopath about this problem. He advised the application of a heating pad to the area of the left temporomandibular joint. She followed his instructions but had six to eight recurrences in one week.

PAST MEDICAL HISTORY:

Patient stated that she had been troubled with "arthritis" in her fingers for several years.

EXAMINATION:

There was unilateral subluxation in the left temporomandibular joint on opening and a limitation of lateral movement of the mandible toward the left side.

Radiographs of both temporomandibular joints in the open and closed positions were taken on October 20th, 1953. (Figures 1 and 2.)

RADIOLOGICAL REPORT:

"On the left side the joint space is clear and the cortical bone of the

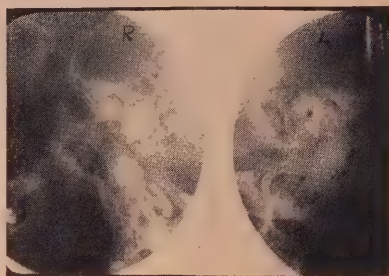


Figure 1

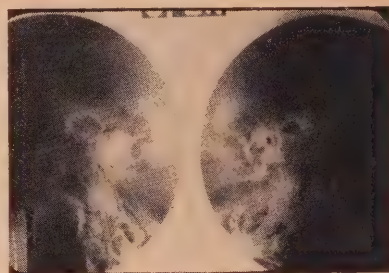


Figure 2

condylar fossa and process appear normal. When the patient's mouth is open the condylar process advanced well anterior to the articular eminence. The amount of excursion must be considered abnormal. On the right side the condylar fossa is rather flat and the cortical bone of both the fossa and the condylar process is irregular and somewhat sclerotic. The open mouth view shows about normal excursion, but since there is no well defined articular eminence this is difficult

to evaluate and by measurement it moves just as far as the left condylar process.

IMPRESSION:

1) Subluxation of the left condylar process in the open mouth position. It is of interest that the left temporomandibular joint as such appears normal.

2) There would appear to be severe arthritic changes in the right temporomandibular joint with clouding of the joint space and irregularity of the bones. The arthritic changes are so marked that the articular eminence is not well defined and whether or not there is also subluxation in the open mouth position on the right side is difficult to determine.

This patient was again seen on October 26th, 1953. A medical consultation was advised, but the patient refused. Radiographs and photographs of the hands were taken for academic purposes. (Figure 3.)

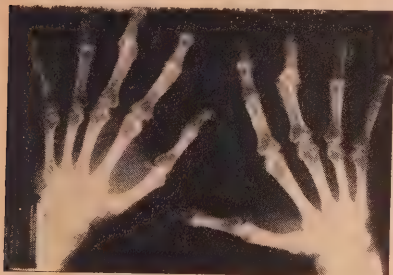


Figure 3

RADIOLOGICAL REPORT:

"PA films of both hands show extensive degenerative changes at most of the interphalangeal joints and most of the interphalangeal joint spaces are narrow due to destruction of the cartilage. There is fragmentation, loss of bone substance, and subluxation at the proximal interphalangeal joint of both third digits. The bones are not particularly demineralized. At least two of the joints show narrowing of a joint space without significant degenerative changes. The metacarpophalangeal joints are not remarkable and the wrists appear normal."

IMPRESSION:

"The findings are compatible with an old burned out rheumatoid arthritis of the fingers and there are now marked secondary degenerative changes. The fact that the patient has apparently had rheumatoid arthritis in the fingers would suggest the possibility that the changes in the right temporomandibular joint may also be of the rheumatoid type."

This patient failed to keep her next appointment and was not seen again until five months later, when on March 24th, 1954, she was seen in the oral surgery out-patient department complaining that her jaw went out of joint the night before while eating. She saw her family dentist and he reduced it but it subluxated immediately again when she tried to insert her dentures. Her dentist was then unsuccessful with further attempts at reducing the jaw, but it reduced spontaneously on the way home. During the five month period from her last visit the jaw had subluxated at least twelve times.

The patient was admitted to the hospital for injection of the left temporomandibular joint with "synlasol".

A medical consultation was obtained and the examining physician found that the patient had been known to have arthritis for twenty-five years. There had never been an acute phase, but gradually over the course of years she had some sort of trouble with her knees, ankles and fingers. The stiffness and pain in them was particularly noticed in the cold weather and the striking weather changes. Patient denied any local inflammatory reaction at any time, and there was no history of rheumatic fever or scarlet fever. She was known to have chronic discoid lupus erythematosus, diagnosed by removal of two lesions from her face in October, 1951, by a dermatologist. She had not noticed any similar lesions anywhere else.

Physical examination revealed some healed scars on the cheeks and left frontal region. Inspection of the right retro-

auricular area revealed an area of brownish pigmentation with some suggested scaliness. The rest of the physical examination was non-contributory.

IMPRESSION WAS:

1) Mixed arthritis (Rheumatoid greater than osteoarthritis).

2) Chronic discoid lupus erythematosus (treated) and recurrent.

A sedimentation rate test was performed. The result was within normal limits. A blood uric acid study was done to rule out gout and it was also normal -4 mg/100 ml. of blood.

The medical department advised only symptomatic treatment with aspirin for her "mixed arthritis".

"1 cc. Sylnasol" solution was deposited into the left temporomandibular joint area on March 25th, 1954. The patient had very little pain following this proce-

dure and was discharged on March 26th 1954. She was seen in the out-patient department on March 30th, 1954. She had no episodes of subluxation since the left temporomandibular joint had been injected. She could open her mouth to a width of 27 mm. and still exhibited limitation of lateral movement to the left. She was next seen on April 13th, 1954, and could now open 29 mm. She had no bouts of subluxation and only slight soreness at the injection site.

This case is presented for two reasons:

1) To show the value of injecting sclerosing solutions, such as sodium psyllate into joints that exhibit recurrent dislocation.

2) The unusual combination of recurrent dislocation in a joint which was radiographically normal, while the other temporomandibular joint exhibited marked radiographic changes due to rheumatoid arthritis.

200 St. Clair Ave. W.

NATIONAL DENTAL EXAMINING BOARD OF CANADA EXAMINATION SCHEDULE, JUNE 1956

Duration of each written examination session—2½ hours

Monday, June 4th

	West of Brandon	East of Brandon
Operative Dentistry	9.00 a.m.	10.00 a.m.
Oral Surgery, Anaesthesia & Pathology	1.30 p.m.	2.30 p.m.

Tuesday, June 5th

Prosthodontics	9.00 a.m.	10.00 a.m.
Ethics, Jurisprudence & Practice Management	1.30 p.m.	2.30 p.m.

Wednesday, June 6th

Preventive Dentistry	9.00 a.m.	10.00 a.m.
Oral Medicine	1.30 p.m.	2.30 p.m.

Thursday, June 7th

Two half-hour oral examinations (interval and time at discretion of Oral Examiner).

Oral examination will be in the application of basic sciences to clinical dentistry.

Applicants accepted as candidates for examinations will be notified individually as to the place they shall report for examinations.

The National Dental Examining Board issues a certificate to successful candidates which may be registered with any or all Canadian Provincial Licensing Boards for the purpose of securing a license to practice in the respective province.

Application on the proper form must be submitted to The Secretary, National Dental Examining Board on or before April 15th in order to be acceptable for the annual examination. Application forms may be secured at the office of your Faculty of Dentistry or by writing the Secretary. All correspondence relating to the NDEB should be addressed to:

**Dr. H. N. Beach, Secretary,
National Dental Examining Board of Canada,
150 Metcalfe Street,
Ottawa, Canada.**

ABSTRACTS

Effect of Tin-Foil Substitutes on the Strength of Denture Base Resins.

by CARL W. FAIRHURST, Cert. D. Tech., and
GUNNAR RYGE, D.D.S.

The Journal of Prosthetic Dentistry, July, 1955.

The use of tin-foil substitute as a mold liner for processing self-curing and heat-curing denture base resin results in a product with a slightly less strength than when the resin is processed in a mold lined with tin foil.

Some difference was found between strength values for heat-cured resin specimens processed in molds lined with different brands of tin-foil substitutes.

Extraction wound healing: Clinical Observations.

by W. HOWARD DAVIS, D.D.S.; ADRIAN O. HUBBELL, D.D.S.; WILLIAM E. BOGART, D.D.S., and VAN M. GRAVES, D.D.S., Long Beach, California.

Journal of Oral Surgery, July, 1955.

A study was made of 2,874 lower third molar extractions. No medication was used for one-third of the wounds and these were considered as controls. Sulfa cones were used in one-third of the cases, and oxytetracycline (Terramycin) cones in the final third. Appearance and subjective symptoms were recorded for the instances of normal healing and "complicated healing". Only two instances of the classical dry socket were observed.

The strength of self-curing denture base resins is decreased by a decrease in curing time. After two and one-half hours curing time these materials do not exhibit full strength.

Self-curing and heat-curing resins show similar warpage habits after storage when processed in a mold lined with tin foil on one side and with tin-foil substitute on the other. Such warpage is more pronounced for heat-curing than for self-curing denture base resins. The warpage habits are explained by different water sorption characteristic of resin processed in contact with tin foil or with tin-foil substitute.

In the series in which sulfa cones were used, there was a decrease in wounds classified as "complicated healing" when compared with the control group. In completely impacted third molar wounds in which sulfa cones were used, there were 38 per cent. fewer "complicated healing" sockets than in the control group.

Oxytetracycline cones showed a beneficial effect consistently. In completely impacted third molar wounds in which oxytetracycline cones were used, there were 60 per cent. fewer painful sockets than in the control group.

No adverse reactions were noted to the sulfa or oxytetracycline cones either systemically or locally.

Practical aspects of biopsy technique in the oral cavity.

by HAROLD KRESBERG, D.D.S. and
BRUCE L. DOUGLAS, D.D.S.

The New York State Dental Journal, June-July 1955.

A biopsy is an examination of a representative section of a lesion of living tissue for diagnostic substantiation. It provides the means for making a final diagnosis. No definitive diagnosis can be made without the assistance of a histopathological examination.

Method of choice for oral biopsies

The excision of tissue with a scalpel is the ideal method of performing a biopsy in the oral cavity, and it should include normal adjacent tissue. The specimen should be narrow and deep rather than shallow and wide. Complete excision is only justifiable in the case of smaller lesions, where normal tissue should also be included.

Pathological Report

If the pathological report reveals a diagnosis of malignancy, it must be considered with the greatest seriousness, although further checks of other areas of the same lesion may be additionally informative.

If the report is negative, it need not be accepted as the final diagnosis, particular-

ly if any doubt remains in the surgeon's mind. Additional biopsies of a representative nature are rarely contra-indicated except in old, severely debilitated patients, in which case every effort should be made to establish the diagnosis with as little surgical trauma as possible. A negative biopsy of a strongly suspicious lesion should always be rebiopsied.

Histopathological verification of a clinical diagnosis of malignancy or, benignity, is a necessity. This is particularly important in determining the method of therapy or the extent of surgical intervention. An unequivocal diagnosis of cancer can only be made on the basis of a histopathological examination.

Dangers of biopsy

There is little danger in performing most biopsies of the oral cavity, other than the normal surgical sequelae accompanying any type of oral surgery. The possibilities of excessive haemorrhage, spreading of the lesion, or infection are minimal if adequate precautions are taken.

The dangers of biopsy are heavily counterbalanced by the importance of confirming a diagnosis with a good biopsy. In the vast majority of cases, a formal biopsy is a comparatively simple procedure and is an imperative part of the confirmation of the diagnosis.

The Dilemma of Undergraduate Orthodontic Education and its Effect.

by WALTER G. SPENGEMAN, A.B., D.D.S., Yonkers, N.Y.

American Journal of Orthodontics, October, 1955.

The development of undergraduate orthodontic teaching has been a slow process, but one in which the standards have been rising gradually over the past three decades. It is safe to say that the worst

training given students today is better than the best that was given twenty years ago.

An unanimity of aims and objectives is being achieved rather painstakingly in the minds of the leaders of those organizations most concerned with this phase of dental teaching. There are still some differences of opinion on how the present dental curricula can best be modified to accomplish the accepted objectives; but it is agreed that the underlying

basic principles should be a streamlining of courses, elimination of repetitious material, and an emphasis on those aspects which are basic to both dental and orthodontic education. Teamwork by all departments of the dental school is of paramount importance.

There is a trend today for closer co-operation between the orthodontic and paedodontic departments of the dental schools, and further liaison between these departments is desirable if the present objectives are to be achieved.

Further clinical experience is mandatory if the undergraduate dental student is to be expected to accomplish even the most minor corrective procedures. Authorities agree that the addition of a minimum of 300 hours to the present orthodontic curricula would be required to achieve this goal.

A survey of the dental practitioners in the State of New York was conducted. Most of the conclusions probably apply

fairly well to other states. These conclusions are:

1. These dentists are aware of the deficiencies of their orthodontic education during dental school. Although about one-third claimed to have taken postgraduate courses designed to promote orthodontic awareness, a great deal remains to be done in this field. Emphasis should be placed on recognition of the "normal" occlusion, the anticipation and detection of malocclusion, and the interception of malocclusion, where possible.

2. The dental literature might well be augmented with more material concerning the growth and development of the head, face, and neck, especially as related to studies in cephalometric radiography.

3. The dentists seem overwhelmingly eager to remedy their present deficiencies in this phase of preventive dentistry. Wholehearted co-operation in this endeavour becomes the duty and concern of every practising orthodontist.

The dental profession's problem child.

by JOHN R. PORTER

The New York State Dental Journal, November, 1955.

Although the following suggestions in respect to the illegal practice of dentistry are directed toward dentists practising in the United States, there is an abundance of sound advice which could be adapted to the various situations extant in the provinces of Canada.

Assuming that all ethical licensed dentists, once they understand the problem, will desire to assist in every way in its solution, the following suggestions are made:

1. Be alert to receive and record in writing information obtained from patients as to experiences had in dealing with unethical dental laboratories and to report promptly such information to

county and state dental societies or to the American Dental Association.

2. Report to your dental society all forms of advertising by dental laboratories, including the advertisement itself, along with the name of the magazine or newspaper, the date of publication, and any other pertinent information.

3. Bring to the attention of state, county and city dental societies the true nature of the problem and promote its discussion at dental society meetings. Material for such discussions will doubtless be furnished readily from headquarters of the American Dental Association or Chicago Dental Society upon request.

4. Include in professional journals articles relating to court decisions and revocation proceedings so as to keep the profession informed as to the current status of law enforcement.

5. Invite judges and prosecutors to at-

tend dental society meetings where this problem will be discussed, so that such public officials will become informed as to its importance to public health. Many judges and law enforcement officers presently look upon this as a matter of mere dollar competition between dentists and technicians and do not appreciate at all the public health factors.

6. Make a survey in your locality to see that low cost prosthetic dentistry is available to people of low income groups through clinics or other agencies, thereby reducing the temptation of these people to succumb to high-pressure advertising by unethical laboratories.

7. Consult with publishers of local newspapers which carry dental laboratory advertising and bring to their attention the question of public health. If necessary, dental societies could purchase advertising space to offset loss of revenue to newspaper publishers, and could use that space to warn the public against unlawful practice of dentistry.

8. Initiate prompt and forceful action against dentists who aid or abet these unlawful practices by ouster from dental societies and by proceedings to revoke their licenses.

9. Make sure that courses in professional ethics in dental schools in your state include a clear presentation of the dental laboratory problem so that young dentists will not be trapped by the ready cash these unscrupulous persons will offer them. A recent graduate of a dental school in Chicago reported that one of the illegal dental laboratories offered him \$1,000.00 per month immediately after graduation if he would establish his office in the same quarters with the laboratory and do the extraction and impression work of customers brought to the laboratory by various types of advertising.

10. Consult with officials of your local Better Business Bureau so that they will understand your problems and will assist you in processing complaints which come to them. The relationship existing between the American Dental Association, Chicago Dental Society and the Chicago Better Business Bureau is an extremely pleasant and helpful one. It has resulted in effective action in many cases, especially in the field of newspaper advertising and in handling complaints from persons living in various parts of the country, who have become victims of mail order dentistry.

Blood loss during operation for multiple extraction with alveoloplasty and other oral surgical procedures.

by ROBERT J. GORES, D.D.S., R. QUENTIN ROYER, D.D.S. and FRANK D. MANN, M.D., Rochester, Minn.

Journal of Oral Surgery, October, 1955.

Blood loss was measured in 50 patients in whom oral surgical procedures were performed. In 47 patients, the operation was multiple extraction and alveoloplasty; in three, it was more extensive. The magnitude of the blood loss approxi-

mated that of general surgical procedures such as gastric resection.

All patients received general anaesthesia. In 21 of these patients, the soft tissues in the region of the operation were infiltrated with a local anaesthetic solution which contained vasoconstrictor drug. The 26 patients who did not receive the local anaesthetic were considered as controls. When operations of equal severity were compared, it was found that use of the vasoconstrictor decidedly diminished blood loss. The corresponding increase in dryness of the operating field, however, did not reduce average operating time.

PUBLIC RELATIONS

Instructing Patients on the Limitation of Dental Restorations.

At best any dental restoration or prosthesis is only an artificial means of restoring lost tooth structure or the complete loss of part or all of the dentition. This must at all times be impressed upon the patient for too many have the misconception that once a restoration has been placed in the mouth it is a permanent cure for his particular problem. Unfortunately too many dentists if they do not openly say so, at least do not dissuade the patient from the feeling that this is a guaranteed service which will be of a permanent nature. Any dentist realizing the constant physiological changes taking place in the mouth, especially in prosthetic cases whether full or partial, must caution the patient that regular attention and care must be taken so that necessary adjustments to this physiological change can be done if and when the occasion arises. Too often the prosthetic patient feels that once the treatment has been completed his days in the dental chair are over. However, he will become a disgruntled person when the denture becomes loose, and the bite begins to close unless the situation has been explained properly to him previously.

A restoration in the mouth, if done well may not necessarily be lasting; but a patient dentally educated, instructed in the proper methods of oral hygiene and

home care, is one who will appreciate the dentist's care and understand the possibilities of subsequent breakdown. Gold and amalgam fillings have their own special problems of cavity preparation and insertion, but it is the anterior aesthetic fillings, such as the silicates and acrylics, which cause the dentist the greatest concern and the patient therefore must be warned of the limitations of the materials used in these restorations.

A patient with a history of rampant caries may of necessity have restorations replaced as caries develops but proper home care plus attention to dietary intake will help minimize dental breakdown.

The maintenance of a healthy mouth is a partnership between dentist and patient. The life span of all restorations depends greatly on the care taken of the mouth by the patient in co-operation with the dentist.

Careful technique in the proper insertion of any dental restoration plus adequate instruction to the patient in respect to oral hygiene and diet combined with the patient's understanding of possible limitations of dental restorations will engender a relationship between patient and dentist marked by confidence and trust.

ANNUAL CONVENTION
THE CANADIAN DENTAL ASSOCIATION
AND
ALBERTA DENTAL ASSOCIATION
BANFF SPRINGS HOTEL • BANFF, ALBERTA

JUNE 3, 4, 5, & 6, 1956



THE FABULOUS BANFF SPRINGS HOTEL IN THE HEART OF
THE MAJESTIC CANADIAN ROCKIES

EDITORIAL

Deductibility of pension payments from taxable income

The provision of a retirement income sufficient to meet reasonable standards of living is not only a desirable objective but a virtual necessity. Self-employed professional people find themselves in a somewhat peculiar position, however, when they attempt to make provision for just such a need. On the one hand, those who are employed in a group or in industry are allowed deferment of income tax on a portion of their income if they are eligible for membership in approved pension plans, while on the other, self-employed persons do not experience the same incentive of income tax relief on their personal contributions toward a pension fund.

Members of approved pension plans are permitted to deduct from taxable income their personal contributions to the pension fund in the year in which the contributions are made. When these contributions are returned to the employee as a pension, the tax is levied at that time — a time when personal income is considerably reduced.

The self-employed individual may make retirement provision by the purchase of life insurance or annuities and he pays taxes on his premiums rather than on the income when he receives it. This tax, of course, is levied at a time of maximum income.

One of the obstacles, undoubtedly, to the establishment of a more equitable policy has been the lack of an organization similar to that of an employed group

thereby increasing governmental administrative problems. Membership in a recognized organization, such as the Canadian Dental Association has not yet been accepted as a substitute for the employer-employee relationship.

Representations have been made to the Government of Canada by professional organizations, both individually and collectively. The lawyers, chartered accountants, physicians and dentists have all through their representative organizations at various times, made overtures for more equitable consideration.

Recently, the Canadian Dental Association acting independently presented a brief to the Minister of Finance on the general subject of the deduction of pension payments from taxable income.

In expressing a hope for governmental cooperation toward achieving a solution, the Association made it understood that it had not been motivated by a mere desire for a certain amount of tax relief for members presently practising, but it sought, without undue complications, a reasonable solution of the serious problem confronting all professions. The core of the problem is recognition of the right of professional men to defer income to the non-productive years of life in the same manner in which the great majority of our fellow citizens are now entitled to do.

It has been a long accepted and incorporated principle in income tax legislation that it is a just and desirable matter

of public policy that the individual who has laboured throughout the productive years of his life should be rewarded over a longer period than his active service and that some of the income of the productive years should be deferred to the time when work is no longer possible.

Civil servants, municipal officials, teachers, research scientists, and those professional men who enter salaried employment, all receive the benefits of deferred income similarly to those engaged in commercial occupations. The application of this principle is not confined to the low or moderate income groups, and many persons who belong to the highest income bracket are beneficiaries.

As a matter of good public policy, the maintenance of income as a stabilizing factor in the economy of the nation, contributing to the maintenance of employment and general well-being, is surely to be desired and it is certainly contrary to good public policy that professional men, however able in their prime, should be compelled, as a matter of personal subsistence, to continue practice after their faculties are impaired.

Professional people work for a living. They must personally perform long and arduous work which from the very nature of their calling cannot be delegated to a subordinate or employee. It is a precarious living, dependent upon their own exertions, which many are forced to continue from sheer necessity at an age recognized even in less personally demanding occupations as meriting cessation of work, but nonetheless continuing reward.

The income uncertainties thus created for professional men are exacerbated by the many problems which fall upon them as a class in a unique and onerous way:

The dentist reaches his peak earnings for a short period only, and his later years especially are ones of steadily declining income.

The salaried man in the same income bracket tends steadily to increase his in-

come throughout working life, usually reaching a maximum just before retirement.

The substantial costs of a professional education cannot be capitalized and depreciated as can the capital assets of most businesses.

The income of the professional man ceases the moment he is unable personally to continue to practise.

Most businesses can continue successful operation with subordinate staff, and they produce income for the owners or senior officials in event of ill health or retirement.

A professional practice provides no tangible asset or equity holding which has a sale value which can meet an emergent or retirement need.

The dental practitioner cannot be engaged in a restricted or subordinate capacity—he is either practising or he is not. And once retired he has great difficulty in re-establishing himself, if at all possible, no matter how great the need.

The only economic hope of the professional man in disability or retirement is savings out of professional income. Yet increasing difficulty is experienced by professional men in making these savings. The recent economic survey, presented by the Canadian Dental Association, demonstrates that the majority of the dental profession has not found it possible or within professional ethics to increase professional fees in proportion to the rising costs of taxation, professional training and living in general.

The latest edition of "Taxation Statistics" from the Department of National Revenue reveals:

(a) In the Income Class \$5,000 to \$10,000, the total number of taxpayers is three and one-half times the total number of all professional men in Canada.

(b) In the same income class, the amount of income derived from "wages or salaries" is fourteen times that from "professional income."

(c) In the higher income classes "wages and salaries" are in the following proportions to "professional income":

\$10,000 to \$15,000—	4¼ to 1
15,000 to 20,000—	3 to 1
20,000 to 25,000—	3 to 1
25,000 to 50,000—	3 to 1
50,000 and over—	4 to 1

This evidence then clearly suggests that the fundamental principle of the right of deferment of income is not merely applied to a substantial majority while it is withheld from a minority but that the minority thus discriminated against are in the lower levels of each income group and less able to bear the brunt of such discrimination.

The professional men thus are compelled, unlike any other economic group in the country, to endeavour to meet their special economic hazards with what is left after the full demands of taxation are met. In present circumstances they are given the alternatives of either reducing their standards of living below those of persons in supposedly comparable positions and income classes in other lines of endeavour or facing old age with inadequate resources.

It is perhaps self-evident that able men, while they are yet in the position to make a choice, will not elect a vocation which will confront them with economic uncertainty throughout their careers yet provide them with lower standards of living than those in more economically sheltered positions or demand their acceptance of a serious reduction of their standards of living when they reach retirement. Tangible evidence of the consequences is being found in that the average age of dentists in Canada is now well over 50 years, as shown in the Federal Health Survey Reports of 1951. The annual additions as well to the dental profession only slightly exceed the losses through retirement, decease and emigration. In other words, the growth of the dental profession is not commensurate

with the growth of the nation, and the profession is losing ground in its endeavour to provide adequate dental services to the Canadian people.

The Canadian Dental Association has suggested the following approach and procedure in an effort to find a common meeting ground for the various points of view which would achieve a desirable and essential end:

(a) The Canadian Dental Association (like other national professional bodies) may be said to stand in a position, in regard to the members of that profession, not unlike that of a business or industrial enterprise to its employees, except in regard to the employer-employee relationship.

(b) This employer-employee relationship appears to be the sole present provision in the Act which prevents a professional association from establishing an approved pension plan for its membership.

(c) If the Act were amended to provide that, in addition to employers, professional associations incorporated by Act of the Federal Parliament or a Provincial Legislature, could establish an approved pension plan for their membership on the same terms and conditions as now obtain in regard to pension established by employers, the case would be met.

(d) Only bona fide members would be participants.

(e) Each member could voluntarily participate in the plan, making contribution out of taxable income up to the present individual maximum per annum.

(f) The establishment of a few plans (probably eight or ten) would be involved and consequently a minimum of administration is required.

(g) Automatically professional associations would provide the necessary conditions of trusteeship, supervision and annual reports to the Department.

(h) No question of discrimination between members of the same profession or between professions arises.

(i) The definition ("c" above) precisely describes those eligible and would appear to obviate abuse through unpredictable extensions.

Time alone will tell whether or not the Association has struck a responsive chord.

From all of us who are engaged in the production of this Journal, to all of you who read its pages, may we wish A Very Merry Christmas, and a Happy and Prosperous New Year.

Wesley J. Dunn.

Book Reviews

Progressive Practice in Dentistry. By Edward W. Samson. Technical Press: 328 pages. Price: \$3.50.

The third edition of Edward Samson's *PROGRESSIVE PRACTICE IN DENTISTRY* is now before the public. This British book first published in 1931 has been thoroughly revised in the light of changes in dental practice wrought by science and by nationalization.

The first chapter raises two very interesting points. Samson, who is an English dentist and thus is not entitled to be addressed as "Doctor", does not feel that he or his British confreres should have any feelings of inferiority thereby. Dentists, he says, should not be suffering from a sense of injustice but should look to themselves to raise the stature and reputation of the profession. This is undoubtedly so, but Canadian dentists after reading Mr. Samson's words will still be rather glad of their own title.

The second problem is whether a private practice is still feasible today in England. Samson feels that it is and he advises young dentists "to try it". One gathers that he is not opposed on the other hand to National Health practice and because of this impartiality his observations are useful. The discussion is not too important to a Canadian practitioner but it does illustrate how we in Canada are fortunate in not having the additional problem of nationalization, to contend with from day to day.

Mr. Samson, after having dealt with these two matters, launches into the practical problems of practising dentistry—whether to open an office in the country or in town, whether to go into partnership, what type of furnishings to have, the staff and their pay. Then he deals with the personal qualities and habits of a dentist—his own teeth, his breath, his cleanliness—all conclusions which are self evident but which are a convenient check list, just the same. Finally, he gives good advice and examples on form letters,

bills, partnership agreements and systems of bookkeeping.

Every now and then some of his observations make one think that parts of the 1931 edition have been erroneously left in. At one point, he states there should also be "a geyser or some other arrangement for heating water . . . boiling bottles are primitive and a nuisance . . .".

Except for a few such touches, *PROGRESSIVE PRACTICE IN DENTISTRY* is a well written and well organized book that can be read with value.

Johnston W. Abraham.

■
Root Canal Therapy. By Louis I. Grossman, D.D.S., Dr.med.dent., F.A.C.D. Fourth Edition. Published by: The MacMillan Co. of Canada Ltd. Price: \$7.50. Pages: 399.

The fourth edition of this volume is one which will find a welcome place in the library of both the beginner and the well-skilled in the field of endodontics. The beginner will find in the chapter entitled "Pulpless teeth and focal infection" the answers to many questions which may have caused him to hesitate to undertake endodontic treatment in his practice. Much attention is paid to the discussion of such basic subjects as anatomy of the pulp cavity and selection of cases. The detailed instruction on points of procedure will be of special aid to undergraduate and graduate alike. The enlarged section on "Sterilization of the root canal" fills a need in endodontic literature. In this portion of the work the author has made a serious attempt to present the use of antibiotics in root canal sterilization, and to present the relationships which they hold to older forms of local drug therapy. The closing chapters of the book are reserved for a detailed outline of thought and procedure concerning obliteration of the root canal and the surgical aspects of endodontics. The excellent illustrations lend support to the text and assist the reader's appreciation of the subject matter.

G. C. Hare

The Association

National Health Grants Expenditures in Dental Field

Undoubtedly many dentists have little realization of the amount of monies expended for dentistry under the National Health Grants since inception in 1948. A total of nearly \$2,000,000 has been granted in support of dental health programmes for children. Some \$323,555 has been made available to dental care programs in sanatoria and mental hospitals. These amounts are creditable and have given advancement to dental pro-

grammes which would not have occurred otherwise. Perhaps the most important observation is that the monies were directed into areas where most beneficial. The results of these expenditures are self-evident and this fact speaks well for the programme established by the Department of National Health and Welfare. It should be realized by all that the same monies could have been expended without any apparent result.

Details of these expenditures by provinces appear in the following two tables.

TABLE I
National Health Grants Assistance to Dental Health Programs for Children 1948-1955

	Salaries	Travel	Equipment and Supplies	Professional Training	Total
Northwest Territories	\$ 6,832	\$ 355	\$ 4,969	.....	\$ 12,156
British Columbia	356,290	32,865	95,948	12,505	497,608
Alberta	23,449	208	7,927	8,093	39,677
Saskatchewan	187,809	45,395	105,649	36,318	375,171
Manitoba	16,180	18,540	14,014	.....	38,734
Ontario	285,851	27,310	64,151	26,335	403,647
Quebec	62,871	.....	8,791	18,000	89,662
New Brunswick	67,685	4,149	9,659	8,079	89,572
Nova Scotia	70,708	10,001	13,667	10,669	105,045
Prince Edward Island	73,598	8,350	18,113	17,226	117,287
Newfoundland	54,552	2,335	38,600	.....	95,487
	\$1,205,825	\$139,508	\$381,488	\$137,225	\$1,864,046

TABLE II
National Health Grants Assistance to Dental Care Programs in Sanatoria and Mental Hospitals
1948-1955

	Equipment	Staff	Total
British Columbia	\$ 20,055	\$ 16,770	\$ 36,825
Alberta	6,735	14,460	21,195
Saskatchewan	2,885	.....	2,885
Manitoba	1,384	27,739	29,123
Ontario	23,008	13,320	36,328
Quebec	36,468	75,750	112,218
New Brunswick	4,567	34,160	38,727
Nova Scotia	3,227	.....	3,227
Prince Edward Island	1,557	.....	1,557
Newfoundland	2,024	39,446	41,470
	\$101,910	\$221,645	\$323,555

President's Visitations—Oct. 20th to Nov. 9th

The President, Dr. R. R. McIntyre, addressed the following meetings in Eastern Canada.

October 20th — New Brunswick Dental Society at St. John.

October 31st — Nova Scotia Dental Association at Halifax.

November 1st — Prince Edward Island Dental Association at Charlottetown.

November 3rd — Newfoundland Dental Society at Corner Brook.

November 7th — La Société de Stomatologie de Québec at Quebec.

November 8th — Mount Royal Dental Society, La Société Dentaire de Montréal, Montreal Dental Club at Montreal.

Briefs

—Vincenzo Guerini, noted dental historian, died in Naples, Italy on May 19th last. He was nearly 96 years old.

—Alfred Gyri of Zurich, Switzerland, internationally-known prosthodontist cele-

brated his 90th birthday on August 31st. —H. Parker Buchanan, Secretary, British Dental Association, visited C.D.A. Headquarters for three days on his way to the A.D.A. meeting at San Francisco. He was made an honorary member of the American Dental Association.

—32 nations, ranging from countries as far distant as Japan, New Zealand, Malaya and Argentina, were represented at the Annual Meeting of the International Dental Federation at Copenhagen, August 14-20, 1955. There were 142 dentists in attendance from United States.

—City of St. Louis (pop. 868,500) began fluoridating the water supply on September 28th last.

—Howard Majerison, director of the Forsyth Dental Infirmary for Children, Boston, died suddenly on September 4th.

—"Dental Abstracts" a new publication will be issued monthly beginning January 1956 by the American Dental Association. Subscription price in Canada: \$7.00 per annum.

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions

AMERICAN COUNCIL ON EDUCATION:

Sponsored research policy of colleges and universities. A report of the committee on institutional research policy. 1954. 95 pp.

AMERICAN DENTAL ASSOCIATION:

Handbook for dentists; a speaker's guide. 1955. 43 pp. 20 fig.

BOX, H. K.: Oxygen insufflation in periodontal diseases. 1955. 94 pp. illus.

CALONIUS, P.-E. B.: Statistical studies on the frequency of caries in the permanent dentition of children. 1953. 110 pp. illus.

CHEESEMAN, J. E.: Bailliere's synthetic anatomy. Part IX: Head and neck. 12 fig.

CLAPESATTLE, H.: The Doctors Mayo. 2nd ed. 1954. 426 pp. illus.

FOOTE, F. W. Jr., and FRAZELL, C. E.: Tumors of the major salivary glands. 1954. 149 pp. illus.

MACDONALD, F.: For Greece A Tear; the story of the Greek war relief fund of Canada. 1954. 193 pp. illus.

McCOLLUM, B. B., and STUART, C. E.: A research report which is the first complete printed description of the science of gnathology. 1955. 123 pp. illus.

PENNELL, E. H., and PENNELL, M. Y.: Health manpower source book. Section 7, Dentists. U.S. Department of Health, Education and Welfare. Public Health Service, Divisions of Dental Resources and Public Health Methods. 1955. 158 pp.

Economic Security

"All Men are Mortal"

Part C—Causes and Rates of Decease

by E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.,
Consulting Economist, and Administrator of the
C.D.A. Plan.

Having given consideration in the two previous articles to the causes, incidence and duration of disability, we now turn to an examination of the causes and rates of decease. The general death rate of Canada is 9.04 per thousand of the population, or one of the lowest in the world. The death rate of males exceeds by approximately 25% that of females, and also reaches its peak in earlier age groups. (See August, 1955, issue of the Journal of the C.D.A. for data—the extent to which female longevity exceeds male).

As we are here concerned primarily with the economic factors of decease, the statistics of this article will deal only with males in the economically productive years, ages 25 to 65. All statistics are taken or derived from the publications of the Dominion Bureau of Statistics.

31.1% of all male deaths occur in the economically productive ages in detail:

Age Group	Male Population	No. of Deaths	Rate per 1,000
25-29	553,000	906	1.64
30-34	513,000	949	1.85
35-39	504,000	1,261	2.50
40-44	446,000	1,724	3.87
45-49	388,000	2,475	6.38
50-54	340,000	3,370	9.91
55-59	292,000	4,600	15.75
60-64	264,000	6,561	24.85

What cuts these men off in their prime?

Class of Cause	Rate per 1,000	% of total adult deaths
cardio-vascular	3.83	50%
cancer	1.28	16%
accidents (all)	.05	6%
digestive system	.05	6%
all other	2.9	22%

The strong correlation between the causes of decease and the causes of disability previously noted is at once apparent. Also the predominance of "stress" results—already well established in re-

gard to heart diseases and suspected of an important role in cancer.

It will be easier to assess the economic problem, however, if we turn these figures around, looking at them from the survival or "optimistic" aspect asking ourselves, at each age, what are a man's chances for survival and for how long? The following figures are the "A-1949 Tables" of the American Society of Actuaries:

Age	Years of Normal Life Expectancy Ahead	Chances in 100 of living to 65
25	49.11	77.8
30	44.61	78.2
35	39.85	78.6
40	36.08	79.3
45	31.45	80.3
50	28.60	82.2
55	24.33	85.6
60	20.28	91.2
65	16.45	—

This demonstrates that the greater mortality hazard is in the earlier years with improving prospects as each milestone is obtained. The man in the age group 35 to 50 must face the fact that he is in a period of considerable hazard as to both life expectancy and his chances of completing economic objectives for his dependents. Once the critical point of age 50 is successfully obtained there is a substantial appreciation in normal life expectancy and the chances of completing a professional career. Clear distinction must be made between the reduction in the mortality (death) rate increase, and the increase in morbidity (illness) in these last 10 to 15 years.

Attention must be directed to two important conclusions arising from the facts adduced: The need for alleviation of "stress" thus improving the balance of probabilities; second, provision of economic resources to meet the problems which inevitably must be faced by a substantial number. It hardly need be added that reasonable provision for the second produces a beneficial influence on the first aspect. This will be the subject of the next article.

Committees and Councils

Specialists and Specialization

During the past year your committee have received numerous inquiries regarding specialization. It is apparent that many of those making the inquiries are under the impression that some form of National Specialization program is in effect. Specialists and Specialization is a matter which falls under the jurisdiction of the Provincial Licensing bodies and consequently there is some variation in

the different Provinces as to qualifications, regulations and the actual specialties recognized. All the Provinces which recognize specialists, however, follow more or less the pattern of the model plan proposed by the C.D.A.

There have also been a number of inquiries as to the possibility of recognizing Dental Public Health as a specialty. Further study is being made regarding this suggestion.

A. Gerald Racey, Chairman.

The Corps

Lt.-Col. I. A. L. Millar, Major G. C. Evans and Major A. T. Roger of the R.C.D.C. School, attended the conference on dental education held at the Faculty of Dentistry, University of Toronto, Sept. 12-14, 1955.

Major G. C. Evans and Major H. W. Hart presented clinical demonstrations at the R.C.D.C. School during the Eastern Ontario Dental Convention, September 18-20. The title of Major Evans' presentation was "Jacket Crown Preparation Employing High Speed" and Major Hart's "Preparation of a Patient for Partial Denture Prosthesis Utilizing High Speed Instrumentation". Lt.-Col. I. A. L. Millar, Major G. R. Covey and Major A. T. Roger also presented a paper entitled "Treatment Selection" at this convention.

Major H. W. Hart of the R.C.D.C. School presented a table clinic on "Mouth Preparation for Partial Dentures" at the Montreal Fall Clinic.

The Corps regrets the sudden death of Major Howard S. Lankin at Metz, France. He was found dead in his quarters on October 31st, presumably the result of a heart attack. Major Lankin graduated from the University of Toronto in 1938 and was commissioned in the Canadian Dental Corps in May 1940. Proceeding overseas in September 1942, he served in the U.K., Italy and North-west Europe. Having retired from the Army in 1946, he was re-enrolled in 1948 and has since served in Korea, Labrador and Europe.

Major Lankin is survived by his wife, two daughters, aged five and four and a son, aged one year. Major Lankin will be sincerely missed by his many friends in the Canadian Forces.

Colonel F. R. Drewry attended the annual convention of the Association of Military Surgeons of the United States in Washington, November 7-9, 1955.

Royal Canadian Dental Corps Association

The eighth Annual Meeting of the Royal Canadian Dental Corps Association was held at Wallis House, Ottawa, on the 6th, 7th, and 8th of October 1955.

In attendance was the Executive, three ADDS's, the Commanding Officers of the twelve Militia Dental Units and Lt.-Col. Jack Koop, President, Ontario Branch. The

R.C.D.C. Directorate, Regular Army, was represented by Col. Bryce Climo, Col. Fred Drewry, and Lt.-Col. Liv Millar. A most popular and respected figure at this meeting was Lt.-Col. W. G. Trelford, Toronto, who commanded the first Dental Unit to proceed overseas during World War II.

President, Lt.-Col. H. R. McLaren, Ot-

tawa, was in the chair, and conducted the meeting throughout.

This meeting was unique in that it was the first occasion that the Commanding Officers of the Dental Militia Units from the Atlantic to the Pacific had the opportunity of gathering together to discuss mutual problems.

Highlights of the meeting were the visits and realistic addresses of the Chief of the Canadian General Staff, Major-General Howard Graham, the vice Adjutant-General, Brigadier A. B. Knight and Col. Lambe, Director of Militia.

Lt.-Col. J. E. Merritt, Halifax, reported on the meeting of the Conference of Defence Associations held at Ottawa in January. The R.C.D.C. representation at this Conference was reduced from four delegates to three.

The problems that occasioned the most discussion were Summer Camps, The General Efficiency Marking Guide, the withdrawal of the Regular Army "I & A" Cadre, and the general apathy of the former Dental Officers, now in civilian life, in their support of the Association.

The opportunity for all former serving Officers of the Royal Canadian Dental Corps to obtain a Life Membership in the Corps Association was emphasized. Their support is needed. Lt.-Col. Murray MacDougal, Vancouver, who was at their meeting, is the first Life Member. The fee for Life Membership was set at \$25.00. It was decided to hold a "Cocktail Hour" for all former R.C.D.C. Officers of both wars, during the CDA Convention at Banff in June of 1956. Col. Spencer Lea, Calgary, was appointed Convenor.

At the Annual Dinner, the various trophies, competed for in the General Efficiency Competition were presented. The Moore Trophy to Lt.-Col. J. L. Warriner, Winnipeg, O.C. No. 57 Dental Unit, by Col. Bryce Climo. The Trelford Trophy to Lt.-Col. G. K. Clarke, Ottawa, O.C. No. 54 Dental Unit by Lt.-Col. W. G. Trelford. The Saskatchewan Dental Association Memorial Trophy to Lt.-Col. G. K. Clarke, Ottawa, by Col. Bryce Climo.



Col. W. G. Trelford presents the Trelford Trophy and Saskatchewan Memorial Trophy to Lt. Col. G. K. Clarke, CO 54 Dental Unit CA (M).

L. to R.: Col. W. G. Trelford, Lt. Col. Hugh McLaren (President RCDC Association), Lt. Col. G. K. Clarke, CO 54 Dental Unit CA (M).

The following were the Officers elected for the year 1956:—

Hon. Presidents — Col. J. F. Edgecombe; Col. C. Strachen.

President — Lt.-Col. H. R. McLaren (re-elected).

President elect — Lt.-Col. J. E. Merritt.
1st Vice President—Lt.-Col. D. W. Henry.
2nd Vice President—Lt.-Col. J. L. Warriner.

Sec.-Treas.—Lt.-Col. D. W. Henry.

Honorary Life Member — Major Hector Thompson, Hamilton.

Representatives to the Conference of Defence Associations:—Col. Spencer Lee, Calgary, Alta. Lt.-Col. Taylor-Wilson, Fredericton, N.B.; Lt.-Col. Norman Simon, Toronto, Ont.

J. P. Whyte, Colonel,
ADDS, RCDC (M),
Prairie Command.

All Officers of 54 Dental Unit are at present undergoing a course of training in the surgical treatment of Maxillo-Facial Injuries. The course is being conducted at HQ, Wallis House, Ottawa, by Major A. T. Roger, MBE, instructor in Oral Surgery at the R.C.D.C. School, Ottawa.

The general scope of instruction consists of demonstrations, practical exercises and films.

British Commonwealth News

The University of St. Andrew's Dental Students' Society (Hon. President, Prof. A. D. Hitchin) has elected **Dr. J. Menzies Campbell** to its roll of Honorary Members, in recognition of his work as a dental historian.

Honorary members already include: The Master of Queen's College (Prof. D. Rutherford Dow), H. T. Roper-Hall, A. N. Horsnell, Prof. W. J. Tulloch and Major-General D. N. Wimberley.

The Provinces

Nova Scotia

The first regular dinner meeting of the **Halifax County Dental Society** for the 1955-56 season was held in the Nova Scotian Hotel on September 29, 1955.

Following the dinner the President, Dr. Ray Epstein, expressed regret that Dr. Henry B. Ross, who was to be the speaker for the evening, was unable to be present due to illness. In his place Dr. H. S. Crosby and Dr. G. M. Lewis had kindly consented to give a talk on their trips this Spring when they visited dental schools in the United States.

At the meeting the following dentists were unanimously made life members of the Society: Dr. A. W. Faulkner, Dr. W. W. Woodbury, and Dr. J. Stanley Bagnall, in recognition of their long and active contribution to the dental profession, not only locally and provincially but also nationally.

New Brunswick

Dr. R. H. Bingham, a native of Moncton and a graduate of Dalhousie University, has been appointed to the Faculty of Dentistry, Dalhousie, as Professor of Oral Diagnosis and Director of the Dental Infirmary, according to an announcement by President A. E. Kerr.

Dr. Bingham, who has been practising in Moncton since the end of the war, assumed his new duties on November 1.

Following his graduation from Dalhousie in 1942, Dr. Bingham went on active service with the Canadian Dental Corps, serving in Canada and in Iceland. During this time he had charge of four separate dental clinics and also attended a postgraduate course in Operative Dentistry. In 1951, he took a course in Oral Cancer Recognition at the Memorial Hospital for Cancer and Allied Diseases in New York and served as an adviser to the Moncton Branch of the New Brunswick Cancer Society. Dr. Bingham has been President of the Moncton Dental Society, the New Brunswick Dental Society, and for the past seven years has been a member of the Council of the latter.

A dinner meeting of the **Moncton Dental Society** was held at Cy's Seafood recently, in honour of Dr. and Mrs. R. H. Bingham, who are leaving for Halifax. Dr. Bingham is joining the dental faculty of Dalhousie University, where he has accepted a professorship.

Fifteen members of the society and their wives were present. Dr. Bingham was presented with a silver tray bearing the signatures of the members of the society. The presentation was made by Dr. L. W. Walker, President of the Society.

Alberta

The Peace River District Dental Society met in McLennan recently. Guest speaker was Dr. R. R. McIntyre of Calgary who spoke on C.D.A. affairs and preventive orthodontics.

Following a business meeting, a banquet was held in The McLennan Hotel.

I. H.

At a dinner meeting held October 5, 1955 in the Sun Room of the Palliser Hotel and attended by one hundred and ten members and guests, the **Calgary and District Dental Society** presented a Symposium on Fluoridation of Communal Water Supplies as a public relations program.

Besides the Speakers of the Panel, the guests of the evening included the Honorable Fred C. Colborne, Minister Without Portfolio in the government of the Province of Alberta; Acting Mayor Mrs. Rose Wilkinson, Dr. R. R. McIntyre, president of the Canadian Dental Association and Dr. R. McManus, president of the Calgary and District Medical Society, each of whom, upon introduction, brought to the meeting the greetings of the organization he represented.

Guests as well were the members of the Calgary City Council, the City Health Officer, some forty medical men and six new members of the Dental Society.

In introducing the subject of the program, the Moderator, Dr. G. C. Swann, pointed out that the role of the profession was to inform the public of the progress of scientific investigation into the merits of a fluoridation plan. Dr. J. A. Duncan, Director of Dental Services for the City of Calgary and the first speaker, using well documented statistics, stressed the advantages to be gained with fluoridation in the lessened incidence of caries and subsequently other dental disorders. Mr. J. Ivor Stong, Commissioner for the City of Calgary, described the various physical plants available, the problems attendant to, and the probable costs of introducing fluorides into the water supply. The third panel member, Mr. Dallas Hawkins,

a chemical engineer with the Sun Oil Company, clearly and carefully explained the chemistry of the fluoride salts and the relationship of the fluoride ion with the calcium of the bone. Dr. S. B. Thorson, a specialist in Internal Medicine, dealt very lucidly with the general medical considerations of the ingestion of fluorides into the human system. He concluded that from a general medical standpoint it must be considered that fluoridation of the water supply is a safe and highly desirable health feature.

The interest in the program spelling success of the meeting was clearly evinced in the discussion period wherein the guests and members kept the panel members busy answering questions for more than thirty minutes.

Dr. John W. Clay expressed the thanks and appreciation of the Society to the speakers of the Panel.

M. J. L.

The first supper meeting of the **Edmonton and District Dental Society** for the 1955-56 season was held in the Seven Seas, under the chairmanship of Dr. Alan Fee.

An excellent paper was presented by Dr. M. J. Lipkind of Calgary. His subject was "Root Canal Therapy and Technic". The speaker illustrated many of his points with slides. Dr. Lipkind showed us that he possesses a thorough knowledge of his subject and that he can present a technical subject in a very interesting way. A short business meeting followed the paper.

R. C. S.

The Red Deer Golf and Country Club, Saturday, Sept. 24th, was the setting for the second annual **Alberta Dental Association Golf Meet**.

The weatherman provided an ideal fall day, following several days of unsettled weather. The morning was crisp and cool but as the meet progressed bright sunshine produced a gradual rise in the temperature.

Forty-three golfers teed off in the tournament and the course was in excellent condition.

The Edmonton and District Dental Society was the host society for the tournament, under the able chairmanship of the social convener, Dr. R. Van Alstine. Local members of the Red Deer and District Dental Society, Doctors Lorne Oatway, S. Fleming and C. D. Husband assisted him in making the meet a successful event well enjoyed by all the participants.

Following the golf a cocktail party and banquet was held. Numerous prizes were

distributed to the lucky golfers and the trophies up for annual contest were presented to the winning golfers.

Dr. T. A. Alexander of Nanton was presented with the Alberta Dental Association Trophy for the low gross score (79).

Dr. T. Demco of Vegreville won the Denco Trophy with a low net score of 71.

The Ash Temple Trophy for team play was captured by the Edmonton and District Dental Society. The four members of this winning team were: Dr. D. M. Buchanan, Dr. O. M. Wright, Dr. P. J. Kendal and Dr. T. Demco.

Dental golf in Alberta for the 1955 season was brought to a happy and successful close.
J. M. S.

Quebec

More than 400 graduates of the **McGill University Faculty of Dentistry** from across Canada and the United States gathered at the University recently to take part in the celebrations commemorating the faculty's 50th anniversary.

At a special convocation in Redpath Hall, the honorary degree of Doctor of Science was conferred upon Sir William Kelsey Fry, former dean of the Faculty of Dentistry of the Royal College of Surgeons of England. Two eminent members of the McGill faculty, Dr. Arthur Lambert Walsh, former dean, and Dr. Frederick George Henry, former professor, received the title of Professor Emeritus.

Acting Dean James McCutcheon officially opened the faculty's dental clinic at the new Montreal General Hospital.

Considered one of the best equipped dental clinics on the continent, it occupies more than 14,000 square feet of space or nearly one entire floor of the hospital. It was equipped by the university at a cost of \$500,000.

The clinic itself consists of 38 fully-equipped units, each of which is used by two students as an "office", Dr. McCutcheon said. In addition there is an operating theatre and lecture room, where the most complex surgical treatments and operations can be performed, including oro-facial surgery. There is an ample and elaborate laboratory in the hospital; an orthodontics centre, and other areas.

Dr. McCutcheon pointed out that the new clinic provides a vast improvement in equipment for the teaching of dentistry. The equipment in the old General Hospital, he said, was installed in 1922 on a temporary basis, but for various reasons was never replaced.

At a ceremony in the amphitheatre prior

to the tour of the clinic, A. H. Westbury, Executive Director of the Montreal General Hospital, welcomed the McGill faculty to the new hospital on behalf of the staff.

Dr. Gordon Kelly, president of the Montreal Dental Club, made the presentation of a fully-furnished conference and seminar room, to be known as the "Dean Mowry Room," in the clinic. Dr. Sid Silver, President of the Mount Royal Dental Society, and Dr. Herbert Caplan, of the Alpha Omega Fraternity, presented cheques, the proceeds of which were used by the faculty for the portraits of its three distinguished deans, Dr. A. W. Thornton, Dr. A. L. Walsh, and Dr. Prescott Mowry. The portraits were unveiled by Mrs. Prescott Mowry, wife of the late dean.

At the convocation, Sir William Fry, who said he was made "both proud and humble" of the honor at this important anniversary, said that the faculty's 50 years coincided with his own 50 years in the profession.

He said that great changes had taken place in dentistry in that period to the point where now it had become established as an integral part of medical science and where dentists had become really physicians dealing with a particular branch of medicine.

Since the early part of the century dentists have accumulated a wide knowledge in all matters and have so broadened the scope of their thinking and judgment they have become, like the physician, "a symbol of wisdom, learning and human kindness," he said.

He mentioned the strides made by the McGill faculty under Dr. Mowry, Dr. Walsh and Dr. Thornton and noted that the quality of the profession depends basically on its teachers.

Dr. McCutcheon presented Sir William for the degree, and Dr. Walsh and Dr. Henry for the title of Emeritus Professor of Dentistry. Chancellor B. C. Gardner conferred the honors.

Dr. F. Cyril James, principal and vice-chancellor of the university, said a sense of sadness lay under the happiness of the anniversary, occasioned by the death of the faculty's dean, Dr. Prescott Mowry, in August.

Miss Anne Ferguson, who has been executive secretary of the Faculty of Dentistry for 29 years, was honored by the graduates at a tea at the Montreal General Hospital. Dr. Edward Bourke, on behalf of all graduates of the faculty — from 10 provinces, many states, London and the Bahamas — presented a purse and cheque. Miss Ferguson will retire this summer.

A dinner at the Ritz Carlton Hotel was

attended by 175 graduates and faculty members, at which Sir William Fry was the guest speaker.

The thirty-first Annual Fall Clinic of the **Montreal Dental Club** was held in the Sheraton-Mount Royal Hotel October 19, 20, 21.

This was one of the finest clinics held in years, with almost three hundred dentists registering for the convention. On top of this, another five hundred were present, as guests, exhibitors, students, nurses, and technicians.

The Fall Clinic opened on Wednesday with table clinics and exhibits. Following the luncheon, Dr. Harold Sherman, B.S., D.D.S., from Columbia University, School of Dentistry, spoke on "Control of Dental Pain and Apprehension". He stressed methods of minimizing pain and patient anxiety by the use of anesthesia, pre-, co-, and post-medication.

The Montreal Dental Nurses and Assistants were hostesses at a very successful cocktail party on Wednesday evening.

Thursday morning Gerald Racey, D.D.S., F.A.C.D., F.I.C.D., Ralph Edmison, B. Comm., D.D.S., Leslie Gill, B.A., D.D.S., discussed and demonstrated the basic and practical method of teaching oral diagnosis and treatment planning as used at McGill University.

On Friday morning a paper was delivered by Dr. W. Turnbull, M.D.C.M., of Montreal, on "Ophthalmic Problems of Interest to the Dental Profession". The paper dealt with the special problems of dentists in relation to the use and care of their eyes, and eye diseases related to dental infection.

On Thursday and Friday registered clinics were held. As in the past, these were of excellent calibre, and all who attended received information and techniques which will benefit both dentist and patient.

H. J. Healey, A.B., D.D.S., F.A.C.D., of the Indiana School of Dentistry, outlined "Everyday Endodontic Procedures and Restoration of the Pulpless Tooth". Dr. Healey clarified everyday endodontic problems, selection of cases, diagnosis, treatment and canal filling materials and techniques, as well as the place of antibiotics in endodontic treatment.

D. H. Miller, D.D.S., F.A.C.D., of Elmira, N.Y., delivered a clinic on "Dental Practice Today and Tomorrow", discussing current and future trends and socio-economic influences in a dental practice.

Comm. H. H. Fridley, D.D.S., M.S.D., of U.S. Naval Dental School, reviewed and

presented his ideas and methods of "Preparations and Wax Patterns in Crown and Bridge". This clinic was well attended and all present were very enthusiastic with Comm. Fridley's preparation and use of high speed handpieces.

Dr. A. B. Riffle, of Rochester, N.Y., spoke on "Invisible Softened Tooth Surfaces" as related to Periodontia and Operative Dentistry. He explained how the recurrent softening of gingival margins of restorations could be prevented and the reasons for same.

Dr. M. S. Matson, of Ballston Spa, N.Y., gave an interesting clinic on "Immediate Dentures Using Tissue Duplication", in which a technique for duplication of labial, buccal, palatal and lingual surfaces, as well as natural colour, can be duplicated.

Dr. H. B. Squires, of Ottawa, Ontario, discussed "Necrotic Gingivitis", diagnosis, etiology, and treatment of same.

Hearty congratulations should be extended to the committees under the General Chairmanship of Dr. D. B. Ward, for the fine clinic. Although space does not permit personally thanking all of those who worked so hard for a successful convention, Drs. McMahon, Ryan, Hebert, Dundas, Mussells and Armstrong should receive special mention as committee heads.

D. J. M.

Saskatchewan

The Saskatchewan Public Health Department has appointed **Dr. S. R. Gelson** of Saskatoon to provide a specialized dental service for physically handicapped children at the Saskatoon physical restoration centre.

Dr. Gelson, who practises in Saskatoon, recently completed a special course at the T. W. Evans Dental Institute in Philadelphia in the dental treatment of physically handicapped and mentally retarded children, where hospitalization and general anaesthesia are required.

British Columbia

On October 17 the **Victoria and District Dental Society** held its monthly meeting in the Empress Hotel with a good attendance. The guest speaker was Air Marshal Sir Philip Livingston, Royal Air Force, who spoke on the subject "Human Stress and Structure". Using as examples the men he worked with in the R.A.F., Sir Philip told of the way men live and work at a level far beyond their normal capacities for long periods of time if they are required to do so.

The Panorama Room of the Hotel Vancouver was the setting on November 1 for

the second successful meeting of the season of the **Vancouver and District Dental Society**.

The featured lecturer was Dr. Harry Sicher, Head of the Department of Anatomy at Loyola University Dental School. One of the world's outstanding anatomists and probably the leading authority on the anatomy of the head and neck, he took for his afternoon topic "Growth of Skull and Face", and in the evening he spoke on "Eruption and Movements of Teeth".

Dr. Sicher had the unusual faculty of making graphic what we always considered a rather theoretical subject, and the large audience listened to his addresses with rapt attention.

At this meeting progress reports were given by committee chairmen, and eight dentists were admitted to membership in the society.

The **College of Dental Surgeons of British Columbia** has an opening for a new official to serve in the joint office occupied by the College, the British Columbia Dental Association, and the Vancouver and District Dental Society.

This official would be a full-time employee whose services would be shared by the three organizations. He would act with the Registrar of the College and should become fully conversant with the duties of the Registrar. He must be a dentist and one who would show a real interest in dentistry and his position. In addition to the regular office hours, he should be prepared to attend all meetings of the Council and the Executive thereof, as well as required meetings of the Executives of the other organizations concerned. He should be in the age group not over fifty in the expectation that he would be in this position for some time. He would be of the executive status and receive a salary commensurate with this position. Applications for the above position will be received by, and should be addressed to the College of Dental Surgeons of B.C., Personnel Committee, 217 Medical-Dental Building, Vancouver 1, B.C. In making application any relevant personal conditions should be stated.

Harold M. Cline, Chairman
Personnel Committee

Twenty-five dentists of the **Interior Dental Society** attended their Fall Clinic held this year at the Hotel Prince Charles in Penticton on October 29.

Dr. J. W. Neilson, Department of Perio-

dontology, University of Washington, Seattle, was the guest clinician. During the afternoon period Dr. Neilson gave an illustrated lecture on "Periodontia for the General Practitioner". He proved himself to be a very able clinician and was given a warm reception by the society members.

The evening business meeting was taken up mainly with the election of officers for the ensuing year, after which Dr. Neilson gave an interesting and amusing address on the history of periodontia up to the present day.

The new officers for 1956 are: President, Dr. G. J. Cameron, Kamloops; Vice-President, Dr. B. A. Bishop, Vernon; Secretary-Treasurer, Dr. L. E. English, Kamloops; Directors, Dr. K. E. Geis, Kelowna, and Dr. W. A. McIver, Penticton.

D. H. M.

Manitoba

The first meeting of the **Winnipeg Dental Society** for the 1955-56 season was held October 17th, at the Airport Hotel. The executive of the Society for this year consists of:

Past President Dr. T. J. Cooke
 President Dr. Z. Kasloff
 Vice President Dr. G. Campbell
 Clinic Chairman Dr. W. Grenkow
 Secretary-Treas. .. Dr. M. J. Averbach
 Committee Dr. P. Beattie
 Dr. G. Merkeley

The Guest Clinician for this meeting was Dr. W. Branstad of St. Paul, Minnesota. Dr. Branstad who is on the staff of the University of Minnesota Dental School, travels extensively throughout the United States giving lectures and clinics, and when possible conducts a private practice in St. Paul.

Dr. Branstad chose as his subject "Oral Physiology-Diagnosis and Treatment". He spent the morning discussing the various theoretical factors that must be considered before an adequate diagnosis of any mouth can be made. He emphasized the biologic factors rather than the mechanical factors in the dentist's efforts to create a physiologic articulation which is a tooth arrangement where all the teeth are functioning in harmony with each other and the paths of the jaw motion. He felt that only a proper diagnosis using all available means would show up potential factors of self-destruction in the mouth, and if the dentist conscientiously plays his part as the oral physician, then many of these factors could be determined long before the patient is aware of them. This, he felt, was true preventive

dentistry, and if practised would do much to eliminate the idea held by so many patients that the loss of all the teeth is inevitable.

Dr. Branstad pointed out that there must be an understanding of physiological chewing versus pathological chewing. He went over the biologic factors involved here — the hinge axis, centric relation, condyles path etc., which are anatomically fixed, then the other factors such as the plane of occlusion, form of cusps etc., over which the dentist has some control. He felt that many patients suffering from temporo-mandibular joint troubles, periodontal conditions, and denture troubles can be cured by establishing the true centric and doing whatever is necessary to allow them to close in this position.

A business meeting of the Society was held following lunch. Dr. Kasloff introduced several new members and also welcomed several members of the Dental Corps who are stationed near the city.

In the afternoon Dr. Branstad showed numerous slides of practical cases he had treated and by means of these he re-emphasized all the points he had brought out in the morning lecture. A question and answer period concluded the presentation.

Dr. George Danzinger thanked Dr. Branstad on behalf of the Society and the applause accorded to Dr. Branstad let him know that we appreciated his efforts.

Ontario

Dentists from Grey, Bruce and Dufferin counties opened a two day course of instruction in Owen Sound recently. The course of instruction was held under the Dental Seminar Program of post-graduate education and was arranged by the **Ontario Dental Association's Dental Public Health Committee** with the co-operation of the Faculty of Dentistry.

This year's program is directed specifically toward the application of newer knowledge and skills necessary for the better dental care of the young child patient. The instructors are Dr. W. K. Shultis, Associate in Orthodontics, and Dr. M. G. Boyes, Associate in Paedodontics, on the Faculty of Dentistry, University of Toronto.

Instruction on Wednesday was held in the offices of Dr. C. J. Baxendale and Dr. W. J. Tackaberry. In the evening a dinner was held in the Seldon House for the dentists, the visiting instructors and invited guests from Owen Sound. The speaker at the banquet was Dr. J. A. Boyd of Stratford,

President-Elect of the Ontario Dental Association.

Dr. Boyd did not speak on dentistry but gave his listeners a highly entertaining talk on "Unusual Words and Phrases". Dr. H. B. Legate of Owen Sound introduced the speaker and Dr. E. J. Weiler of Mildmay, thanked him.

Chairman for the dinner was Dr. D. A. Cheetham who is also District Dental Seminar chairman. Brief addresses were given by Dr. E. A. White and Dr. Glenn Mitton, both of Toronto, and greetings from the city of Owen Sound were brought by Ald. Gordon French.

The Grey-Bruce-Dufferin Dental Society will send a letter to Dr. G. L. Campbell of Markdale, expressing the appreciation of the society for his services to his community and to the profession of dentistry. Dr. Campbell is retiring after 60 years as a dentist.

The 19 dentists who registered for the dental seminar program were divided into two groups for the clinical demonstrations and lectures.

Dr. W. K. Shultis dealt with various factors which affect the alignment of children's teeth. He particularly discussed habits, and how they can contribute to malocclusions, and also demonstrated various orthodontic appliances. There were patients present for the demonstrations.

Dr. M. G. Boyes first demonstrated the use of space maintainers to compensate for the early loss of primary teeth. This was demonstrated first with color slides, and then with a young patient. In the afternoon Dr. Boyes showed the group how to do a complete examination for a child patient, and also performed operative treatment for

a young patient. He concluded with a talk on child and parent management. He was assisted by Dr. Morley Crockford of Toronto.

The annual meeting of the **Kingston Dental Society** was held recently at La Salle Hotel.

Dr. Stanley Watson presided and the following officers were elected: Dr. John Lyon, President; Dr. Harvey Campbell, Vice-President; Dr. W. H. Treleaven, Secretary; and Dr. Frank Sorensen, Treasurer.

Plans were formulated for a November meeting with the Watertown Dental Society in response to a visit from that society to Kingston last spring.

A two-day seminar on children's dentistry is to be held in Kingston in December.

Dr. R. L. Villard, who recently commenced practice in Kingston, was welcomed to the Society.

At the recent meeting of the American Academy of Periodontics held in conjunction with the American Dental Association meeting in San Francisco, Dr. Arthur W. S. Wood of Toronto was elected to the Board.

The **Kent County Dental Society** met on Thursday, October 20th for their first fall meeting. The members enjoyed an excellent dinner at the Town House, Chatham. After the dinner a worthwhile presentation was made by Dr. Harold Dix, prominent clinician from Detroit. His subject was "Newer Concepts in Dental Practice". The President, Dr. Frank Switzer, presided.

General News

Dr. Bernerd C. Kingsbury, of San Francisco, was formally installed as President of the **American Dental Association** on Thursday, October 20, at the close of the Association's 96th annual session in San Francisco. He succeeded Dr. Daniel F. Lynch of Washington, D.C. Dr. Harry Lyons, of Richmond, Va., Dean of the School of Dentistry of the Medical College of Virginia, was named as the new President-Elect. Dr. Gerald D. Timmons, of Philadelphia, Dean of the School of Dentistry of Temple University, was elected Speaker of the House of Delegates.

Dr. Francis J. Herz, of San Francisco,

Chairman of the General Committee on Local Arrangements for the meeting, was elected First Vice-President. Dr. M. C. Hansen, of Racine, Wis., was chosen Second Vice-President and Brig. Gen. Marvin E. Kennebeck, of Washington, D.C., Chief of the Air Force Dental Service, was chosen Third Vice-President.

The meeting, held from October 17th through to the 20th, was the largest in the history of the Association with a total registration of 14,741.

Following extensive debate and three roll call votes by constituent society delegations,

the House of Delegates of the American Dental Association placed the Association on record favouring the voluntary inclusion of dentists in the **Old Age and Survivors' Insurance** (OASI) program of the federal Society Security Act. In the first roll call, delegates voted 266 to 142 to rescind the previous policy of opposition to OASI coverage for dentists which had been in effect since the 1949 annual session and moved to table a resolution favouring compulsory OASI coverage for dentists was defeated by a vote of 246 to 162. Delegates then substituted for the resolution seeking compulsory coverage, a resolution that the Association seek voluntary coverage of dentists, that is, optional on the part of each member of the profession. This substitute resolution was approved by a vote of 246 to 163. Prior to the three roll calls, the delegates voted 235 to 119 to uphold a recommendation of the Committee on Rules and Order that roll calls of state delegations be used as the method for balloting on questions relating to OASI. In approving this recommendation, the House automatically rejected resolutions asking that OASI votes be by voting machines. Presently, dentists, physicians and lawyers are excluded from OASI coverage. Legislation has been approved by the U.S. House of Representatives, however, which would provide compulsory coverage of dentists. This measure is now scheduled for consid-

eration next year in the United States Senate. At the present time, clergymen are the only individuals permitted voluntary coverage under OASI.

The public in the U.S. continued to increase its expenditures for **oral hygiene products** in 1954, paying out nearly a quarter of a billion dollars, but for the first time in recent years, dentifrice sales dipped. More than \$243 million was spent for all oral hygiene products last year, according to the magazine Drug Trade News, an increase of \$2.5 million over 1953 and of \$15.5 million over 1952. However, the sale of dentifrices dropped from an all-time high of \$149.3 million in 1953 to \$147.9 million in 1954. Major cause of the decrease was the sharp drop in chlorophyll dentifrice sales which fell sharply from a peak of \$41.6 million in 1953 to \$23.2 million last year. While dentifrice sales slipped, however, toothbrush sales continued to climb, reaching \$47.9 million in 1954, a gain of more than \$2 million over the previous year. Expenditures for other dental items reported by the magazine were: denture adhesives and cleansers, \$12.8 million; dental floss, \$1.8 million, and mouthwashes and gargles, \$33 million.

The New York Journal of Dentistry.
November, 1955

In Memoriam

John Brady Eaton — Dr. John Brady Eaton passed away at his home in Wolfville on October 18, 1955. He was 42.

Dr. Eaton was born in Coonoor, India, and came to Canada with his parents at the age of four. He was educated in the schools of Wolfville, and at Acadia and Harvard Universities.

Between the years 1939 and 1946, Dr. Eaton went to India and practised dentistry, after which time he returned to Wolfville and set up his practice there.

He is survived by his wife, the former Joan Templeton, and three children, Peter, Ronald and Sally.

Howard Sheldon Lankin — Major Howard Sheldon Lankin, 43, of the Royal Canadian Dental Corps, died Monday, October 31,

1955, while on service with the 25th Canadian Field Dental Unit at Metz, France.

Major Lankin had been in the service since 1940. He had recently returned from Labrador after three years of active service in Korea, and from Toronto had been posted to France.

A son of Frederick C. and Helen Crump Lankin, he was a native of Toronto, attended East York Collegiate Institute and was a graduate in 1938 of the dental college of the University of Toronto. He opened a civilian practice briefly before enlisting in the Dental Corps service in the Second World War.

He was a member of the Fraternal Order of Eagles.

Major Lankin leaves his wife, the former Beryl Beardmore, and three children, Linda, Susan and Timothy.

Frank Bruce Miles — Dr. Frank Bruce Miles passed away at Cranbrook, B.C., recently at the age of 73.

He was born at Upper Maugerville, N.B., and following attendance at Fredericton schools, enrolled at Tuft's University at Boston. He received his degree in dentistry there in 1903 and the following year came to British Columbia, passed his provincial council examinations and in June, 1904, opened the area's first practice which he continued until April of this year except for five months' illness in 1948.

During the Second World War years he was the only dentist serving Cranbrook-Kimberley. He took an active part in city affairs from Cranbrook's earliest days, was a charter member Rotarian and worker in the Board of Trade and active politically in the Liberal Association. He was also a member of Lodge No. 34, A.F. and A.M., Rocky Mountain Lodge and Selkirk Preceptory.

Dr. Miles is survived by his wife and three daughters.

Clifford Masters Pineo — Dr. Clifford Pineo, aged 70, of Port Alberni, B.C., died in West Coast General Hospital after a brief illness.

Born in Nova Scotia, he went to Victoria with his parents as a child. He came to the Albernis as a druggist 48 years ago, and returned again to practise dentistry after graduating from Oregon in 1925.

Surviving are his widow, two sons: Clifford of Tarzana, Calif., and Peter, a university student in Montreal; two daughters: Mrs. R. C. Boyes and Mrs. D. Stainsby of Vancouver.

Thomas Joseph McNally — Dr. Thomas Joseph McNally of Montreal passed away on Friday, October 14, 1955.

Dr. McNally attended Ottawa University and St. Francis Xavier University, Antigonish, graduating in dentistry from the University of Montreal.

He was a member of St. Francis Xavier Alumni, Montreal Dental Club, St. Patrick's Irish Society and the Holy Name Society.

Dr. McNally was the son of Dr. W. J. McNally and Abigail Tapp McNally of Barachois and is survived by his wife, the former Rose Poirier, three sons, Michael, William and Richard and two daughters, Jocelyn and Anne.

Robert Bruce Mackenzie — Dr. Robert Bruce Mackenzie died suddenly on October 13, 1955. He was 41.

Born in St. Catharines, Dr. Mackenzie received his early education from St. Catharines Collegiate and Ridley College, later attending the University of Toronto where he received his doctorate of dental surgery in 1941.

Dr. Mackenzie served as a captain in the Royal Canadian Dental Corps during World War II and spent four years overseas.

He was an active member of Welland Avenue United Church, and served as chairman of the board of stewards and as captain of the finance committee of the church building fund.

He was also a director of the former Kinsmen Club of St. Catharines, and has been active in the newly-founded Gyro Club.

Dr. Mackenzie was the dentist of the Teepee Hockey Team. He was also a member of the Niagara District Dental Association.

Dr. Mackenzie is survived by his widow, the former Errol Grosch, and two sons, Edward and Robert.

Al Bloom — Dr. Al Bloom passed away after a long illness on Oct. 9th, 1955.

Dr. Bloom was born in Winnipeg on May 5th, 1908, and graduated from the University of Toronto in 1931, and has practised in Winnipeg ever since.

He was a member of the Alpha Omega Dental Fraternity, Glendale Country Club and Rosh Pina Synagogue. He is survived by his widow Doris, and one son, Howard, eleven years of age.

Dr. Bloom was a talented violinist and helped pay his way through dental college by performing with orchestras. He was also interested in various musical organizations while practising Dentistry.

Ernest Franklin Arnold — Dr. Ernest Franklin Arnold of Toronto passed away at his home on November 19, 1955, at the age of 77 years.

Born in Vankleek Hill, he was of United Empire Loyalist stock. He graduated from the University of Toronto Dental College in 1903 and began his practice in Toronto, continuing his work up until June, 1955. He was a past president of the Academy of Dentistry and an Honorary Member of the Academy. Dr. Arnold was a member of the Scottish Rite, St. George's Lodge, A.F. and A.M., and attended Trinity United Church.

Dr. Arnold leaves his wife, the former Kathleen Davidson, a son, E. Gordon Arnold, Toronto, and two daughters, Mrs. J. S. D. Tory, Toronto, and Mrs. E. M. Elsley of Lachine, P.Q.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1956	Banff, Alberta	June 3rd—6th
1957	Winnipeg, Manitoba	June 23rd—26th

FUTURE EVENTS

Date	Function	Location	Officer	Address
Feb. 5	Academy of Oral Rehabilitation of Handicapped Persons Meeting	Chicago	Dr. Hugh M. Kopel	19933 Livernois, Detroit 21, Mich.
Feb. 17	Faculty of Dentistry At Home	Toronto	Mr. Bob Hall	Faculty of Dentistry, 230 College St. Toronto, Ont.
Sept. 7-14	Congrès de la Fédération Dentaire Internationale	Rome, Italy	G. H. Leatherman	Secretary, London, England.

SHORT GRADUATE COURSES

Tufts School of Dental Medicine announces the following short courses:

Jan. 4-Feb. 29 General Anaesthesia	Feb. 29-Apr. 18 General Anaesthesia
Jan. 9-13 Full Denture Implants	Mar. 19-21 Cephalographics & Diagnosis
Jan. 10-14 Treatment of Periodontal Problems	Mar. 19-23 Intravenous Anaesthesia for the Dental Office
Jan. 11-Mar. 7 Fractures of the Facial Bones	Apr. 9-13 Periodontology
Jan. 16-18 Splinting in Periodontics	Apr. 6-May 4 Electrosurgery
Feb. 15-16 Technique for Relining Full Upper & Lower Dentures	June 4-8 Full Denture Prosthesis
Feb. 8-Apr. 4 Orthodontics	

Address communications to: Dr. Irving Glickman, Director, Division of Post-Graduate Studies, 136 Harrison Avenue, Boston, Mass.

Temple University announces a short course in Orthodontics beginning January 22, 1956. For further information: Dr. Louis Herman, Director of Postgraduate Studies, Temple University, School of Dentistry, 3223 North Broad Street, Philadelphia, Pa.

Northwestern University announces fifteen short postgraduate courses during the 1955-56 academic year. For further information write the Director of Dental Postgraduate Study, Northwestern University Dental School 311 East Chicago Avenue, Chicago 11, Illinois.

University of Toronto, Faculty of Dentistry announces the following short courses:

Mar. 5-9	Endodontics
Mar. 19-23	Orthodontics (For the General Practitioner)
Mar. 26-28	Orthodontics (For the Specialist)
Apr. 23-27	Periodontics
Apr. 30-May 4	Dental Oral Surgery and Anaesthesia

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Le dentiste devant la loi*

par ALBERT MAYRAND, C.R., Montréal
secrétaire à la faculté de droit de l'Université
de Montréal

En me demandant de parler du dentiste devant la loi, on a eu en vue des problèmes plus particuliers au dentiste, des problèmes de responsabilité professionnelle. C'est donc à ces derniers que nous allons nous arrêter.

La responsabilité professionnelle revêt deux aspects: elle est pénale ou civile. Alors que la responsabilité pénale entraîne la punition du coupable (au moyen d'une amende, de l'emprisonnement ou d'une autre peine disciplinaire), la responsabilité civile a pour conséquence l'indemnisation de la victime. Les buts poursuivis diffèrent considérablement: au cas de responsabilité pénale; c'est l'Etat qui veut réprimer un acte contraire à l'intérêt public, tandis qu'au cas de responsabilité civile, c'est une victime, ordinairement un individu, qui demande au délinquant de l'indemniser des dommages causés.

Les dentistes sont des citoyens exemplaires, de sorte qu'on ne les voit presque jamais cités devant les tribunaux de juridiction pénale. Si donc je vous parle de quelques problèmes de responsabilité pénale, c'est surtout à titre de curiosité.

Une des infractions les plus sérieuses qu'un dentiste ou médecin peut commettre contre la personne de son client est la négligence criminelle:

ARTICLE 191

1. *Est coupable de négligence criminelle quiconque,*
 - a) *en faisant quelque chose, ou*
 - b) *en omettant de faire quelque chose qu'il est de son devoir d'accomplir,**montre une insouciance déréglée ou téméraire ("wanton or reckless disregard") à l'égard de la vie ou de la sécurité d'autrui.*
2. *Aux fins du présent article, l'expression "devoir" signifie une obligation imposée par la loi.*

Selon que cette négligence criminelle

*Conférence présentée à la séance d'octobre de la Société Dentaire de Montréal.

cause la mort d'une personne, ou simplement des lésions corporelles, le coupable est passible de l'emprisonnement à perpétuité (art. 192), ou d'un emprisonnement de dix ans (art. 193).

L'insouciance déréglée ou téméraire à l'égard de la vie ou de la sécurité d'autrui, c'est plus que la simple négligence qui entraîne la responsabilité civile. Il faut que la faute soit à ce point grossière qu'on ne puisse s'empêcher de vouloir la réprimer au moyen d'une punition.⁽¹⁾

Le dentiste qui a échappé un tampon dans la trachée de son client a pu commettre une maladresse qui engage sa responsabilité civile. Mais s'il ne fait rien pour venir au secours du patient qui est en train d'étouffer, il commet alors une négligence criminelle. Si la mort s'ensuit, cette négligence criminelle constituera un homicide involontaire coupable, connu sous le nom de "Manslaughter" (art. 194 par. 5 al. b.).

Cette omission coupable est expressément prévue par les règlements du Collège des Ch.-D.: art. 36, comme un acte dérogatoire à l'honneur professionnel:

"Outre les actes prévus par l'article 122 de la loi des dentistes de Québec, sont aussi déclarés actes dérogatoires à l'honneur professionnel:

a) Le fait pour un dentiste de se rendre coupable de négligence grossière, soit en négligeant ou refusant de prendre soin de son patient alors que survient une complication ou accident, pendant ou à la suite d'un traitement ou intervention quelconque, ou de toute autre façon."

Le Code criminel exige aussi que les personnes qui pratiquent des opérations dangereuses y apportent "une connaissance, une habileté et des soins raisonnables" (art. 187).

Malgré ces textes, les dentistes ne doivent pas avoir l'impression qu'ils s'exposent à commettre un acte criminel chaque fois qu'ils entreprennent une intervention. Pour calmer leurs craintes injustifiées, et leur permettre d'exercer leur profession en toute tranquillité d'esprit, le Code criminel a un article tout à fait rassurant:

ARTICLE 45

"Toute personne est à couvert de responsabilité criminelle lorsqu'elle pratique sur une autre, pour le bien de cette dernière, une opération chirurgicale.

a) si l'opération est pratiquée avec des soins et une habileté raisonnables, et

b) s'il est raisonnable de pratiquer l'opération, étant donné l'état de santé de la personne au moment de l'opération et toutes les autres circonstances de l'espèce."

On m'a déjà posé la question suivante: "Un médecin ou un dentiste est-il tenu de prodiguer ses soins à une personne qui le lui demande ou qui en a manifestement besoin?" En d'autres termes, le dentiste est-il libre de refuser ses services?

L'esprit de dévouement, l'humanité des dentistes et médecins, font que la question ne se pose pas souvent en pratique. Mais nous avons connu des cas d'exception où elle aurait pu se poser.

La réponse à cette question exige des distinctions. Si le dentiste a entrepris de traiter un patient, il doit compléter l'exécution de son contrat médical. Même s'il n'y a pas contrat et que dans un cas d'urgence il est intervenu (c'est le quasi-contrat *negotiorum gestio*), il doit continuer les traitements entrepris jusqu'à ce qu'un autre soit en état de le remplacer (art. 1044 C.c.; aussi art. 1043 et 1759 C.c.). Je crois que cette solution s'impose au point de vue responsabilité civile et aussi, dans les cas graves, au point de vue responsabilité pénale.

En effet, l'article 188 du Code criminel édicte où:

"Quiconque entreprend ("undertakes") d'accomplir un acte est légalement tenu de l'accomplir ("to do it"), si une omission de le faire met ou peut mettre la vie humaine en danger."

Supposons maintenant qu'un nouveau client se présente et requiert les soins du dentiste. Je suis d'avis que le contrat médical est libre et que le dentiste peut refuser ses services. Cela ne fait pas de doute quand le malade a la faculté de s'adresser ailleurs; mais si le cas est urgent ou si le malade ne peut recourir à un autre dentiste sans avoir à parcourir une distance exagérée, la solution ne paraît plus aussi certaine. Sans aucun doute, le dentiste a alors un devoir moral qu'il

n'hésitera pas à remplir. Mais ce devoir moral a-t-il une sanction en droit pénal? Je ne le crois pas.

D'après le Code, il y a bien négligence criminelle à ne pas accomplir son devoir, mais l'article 191 (2) précise qu'aux fins du présent article "devoir" signifie une obligation imposée par la loi. Or, je ne vois aucun texte de loi obligeant un dentiste ou médecin à prodiguer ses soins à toute personne qui les requiert, même si elle en a un besoin urgent. ^(2,3,4,5,6).

Je crois que c'est là une lacune de notre droit. Chaque fois qu'on peut intervenir pour sauvegarder la vie ou la santé de quelqu'un sans risque d'en subir un préjudice sérieux, ce devrait être une obligation légale de le faire. Le Code pénal français (art. 63) contient une disposition dans ce sens: si une personne refuse sans excuse valable d'en secourir une autre qui est en péril, elle commet une infraction et encourt une responsabilité civile et pénale. Ainsi, l'automobiliste qui rencontre un accidenté sur sa route est tenu de lui porter secours. Le code de déontologie médicale française (28 juin 1947) confirme l'obligation de secours du médecin. ⁽⁷⁾

Le bureau du Collège des Chirurgiens-Dentistes possède le pouvoir de remédier à cette lacune du droit. Il pourrait en effet, par règlement, déclarer dérogoire à l'honneur professionnel le fait du dentiste qui, sans raison suffisante, refuse de prodiguer ses soins à une personne en danger immédiat (art. 122, par. 13).

A la responsabilité pénale, se rattache certaines offenses que la loi des dentistes et les règlements du Collège qualifient "d'actes dérogoires à l'honneur professionnel" (art. 122, 134, 135 et 136 de la loi et art. 36 des règlements). Certains de ses actes sont définis avec beaucoup de précision e.g. la publicité illégale est décrite avec un luxe de détails qui ne laisse plus grand place aux difficultés d'interprétation.

Par contre, d'autres offenses sont loin d'être clairement définies, e.g. l'article 122 (al. 2) déclare dérogoire à l'honneur

professionnel "le fait de dévoiler le secret professionnel".

Mais en quoi consiste le secret professionnel? La loi ne le dit pas. Il y aurait avantage à ce qu'elle en donne une définition. Moralistes et juristes essaient de deviner l'intention du législateur, mais ils ne peuvent s'entendre parfaitement là-dessus.

Prenons la théorie la plus sûre et donnons à l'expression "secret professionnel" le sens le plus étendu possible. Pour nous, c'est tout ce que le dentiste apprend à raison de l'exercice de sa profession et que son patient a intérêt à ne pas divulguer. Ce qu'il apprend: non seulement ce qui lui est confié, mais encore ce qu'il découvre. ⁽⁸⁾

Le secret médical ou le secret professionnel du dentiste ne porte pas seulement sur les faits médicaux, mais aussi sur toutes les circonstances qui les entourent. Cela va de soi, le dentiste ne doit pas dévoiler la nature des traitements ou des soins prodigués. De plus, il ne peut révéler l'origine de la maladie de son patient. Ce dernier a pu lui raconter qu'il s'est fait briser une dent au cours d'une bagarre dans des circonstances dont il n'aimerait pas à se vanter. Ce fait et ces circonstances font encore l'objet du secret professionnel. Certains vont même jusqu'à dire que le secret s'étend aux faits appris à l'occasion de l'exercice de la profession alors même que ce fait n'a pas de rapport avec la qualité de médecin ou de dentiste.

L'étendue du secret professionnel varie selon les circonstances du cas. Parfois, le secret professionnel obligera le dentiste à ne pas divulguer les noms et adresse de son patient. ⁽⁹⁾

Le dentiste ne pourrait tout de même pas refuser de divulguer le nom de ses patients-débiteurs, dans le seul but d'éviter la saisie de ses créances. ^(10,11)

De la même façon, en vertu de l'art. 26 ⁽¹²⁾ de la loi de l'impôt sur le revenu, le ministère du revenu national peut demander à un dentiste de lui fournir la liste de ses patients et des montants qu'ils peuvent encore lui devoir. Il peut même

saisir les dossiers de ses patients pour y découvrir l'étendue de ses revenus (126, par. 1).

Le secret professionnel doit être invoqué même devant les tribunaux civils. Le dentiste pourra donc refuser de répondre à une question de nature à provoquer la violation du secret professionnel.

Ceci ressort clairement de la loi médicale du Québec et de la loi des dentistes de Québec. La première stipule (S.R.Q. 1941 c. 264 art. 60 par. 2) que

"Un médecin ne peut être contraint de déclarer ce qui lui a été révélé à raison de son caractère professionnel."

La seconde loi (c. 268, art. 113) déclare d'autre part que:

"Les privilèges et exemptions conférés aux médecins et chirurgiens par les lois de cette province sont accordés par la présente loi aux chirurgiens-dentistes licenciés."

Cependant devant les tribunaux de juridiction pénale, qui appliquent la "common law," on ne reconnaît pas aux médecins ou dentistes le droit de refuser de répondre afin de sauvegarder leur secret professionnel.⁽¹²⁾

On discute encore pour savoir si la source de l'obligation au secret professionnel est la loi ou le contrat médical. On discute aussi quant à la nature et au caractère du secret professionnel: est-il établi uniquement en faveur du patient? Est-il d'ordre public? Par conséquent, le dentiste est-il tenu de garder le secret malgré que son patient lui demande de le dévoiler?

Certains ont soutenu que l'inviolabilité du secret professionnel est absolue. C'est encore l'opinion dominante en France. Institution d'ordre public, le secret professionnel n'appartiendrait ni au patient, ni au médecin, mais à la société tout entière. Par conséquent, aucune permission du patient ne pourrait délier le dentiste de son obligation au secret.^(13,14)

Cette théorie me paraît outrée et c'est avec raison que nos tribunaux l'ont rejetée, non sans quelque hésitation toutefois.^(15,16,17)

Il est plus raisonnable de reconnaître que le patient est pour ainsi dire propriétaire du secret professionnel, qu'il en

est le maître. Si l'on tient compte de la définition que nous en avons donnée, le secret professionnel porte sur un fait que le patient a intérêt à ne pas divulguer. Or, quand il arrive qu'un patient a intérêt à ce qu'un fait soit divulgué, ce n'est plus un secret, et le patient est le meilleur juge pour décider si la divulgation d'un fait est dans son intérêt ou non.

De plus, il ne faut pas perdre de vue la raison d'être du secret professionnel: on veut que le patient puisse donner en toute sécurité les renseignements susceptibles de permettre au dentiste ou au médecin de le traiter en pleine connaissance de cause. Or, la confiance du patient restera entière, s'il sait que le professionnel ne parlera que si lui, le patient, le veut bien.

La seule objection sérieuse à ce régime est qu'on puisse interpréter le refus du patient de libérer le dentiste de son secret comme une quasi-admission que le témoignage du dentiste ne lui serait pas favorable. Mais je préfère encore ce risque problématique, au préjudice certain qui résulterait du silence d'un médecin ou dentiste lorsque lui seul pourrait, par son témoignage, faire triompher la cause de son patient.

Il me paraît donc acquis que le patient peut autoriser son dentiste à confier à autrui la nature de la maladie dont il est atteint ou des traitements qui lui ont été administrés. Mais les héritiers du patient ont-ils la même faculté? Je n'accorderais ce droit aux héritiers que dans des cas extrêmement favorables. En principe, le droit de délier un dentiste de son secret professionnel est un droit strictement personnel, extra-patrimonial et, pour cela, intransmissible.

Cependant, lorsque de toute évidence le patient aurait un intérêt à délier le dentiste de son secret, je crois que les héritiers pourraient lui demander de révéler ce qu'il connaît. Du reste le dentiste pourrait même en principe, sans en être requis par les héritiers, révéler ce qui était autrefois un secret, mais qui n'en est plus un, vu la disparition de l'intérêt. (Contra Ryskmans, No. 163).

En somme, il peut y avoir des faits que l'on veut tenir secrets pendant un certain temps seulement. Ainsi, sa vie durant, un individu peut avoir intérêt à cacher sa maladie de coeur, pour ne pas être ennuyés par ceux qui s'informerait à tout propos de sa santé, ou encore pour éviter que la connaissance de sa maladie éloigne la clientèle. Mais il peut lui être parfaitement indifférent que sa maladie soit connue après son décès.

Pour plus de prudence, on devrait cependant laisser aux héritiers l'initiative de déclarer que les faits dont il s'agit peuvent être divulgués sans inconvénient.

Vu que le Code criminel ignore le secret professionnel, on n'y trouve aucune sanction de sa violation. Par contre, la loi des dentistes autorise le conseil de discipline à imposer une grande variété de peines allant du simple blâme, ou vote de censure, à l'amende (\$200) et à la radiation temporaire ou définitive du tableau de l'Ordre (exclusion du Collège): art. 121 et 130. De plus, il y a possibilité d'un recours en dommages devant les tribunaux de juridiction civile. Car le même acte fautif entraîne parfois et la responsabilité pénale et la responsabilité civile.

Ceci me rappelle qu'il est temps de quitter le domaine de la responsabilité pénale, pour étudier quelques problèmes de responsabilité civile. On sait que la responsabilité civile, qui a pour conséquence la condamnation à des dommages-intérêts, i.e. l'indemnisation de la victime, a un double aspect: elle est contractuelle ou délictuelle. Quand vous avez fait un contrat, contrat médical ou autre, si vous ne remplissez pas toutes les obligations assumées, vous devez indemniser le co-contractant, à moins que vous n'établissiez que l'inexécution du contrat est due à la force majeure. L'inexécution d'un contrat constitue une présomption de faute contractuelle. C'est la responsabilité contractuelle.

En dehors de tout contrat, vous pouvez causer du dommage à autrui; la victime peut exiger que vous l'indemnissiez si elle prouve que ce dommage est dû à votre

faute ou à votre négligence: c'est la responsabilité délictuelle ou quasi-délictuelle (la présence ou l'absence de l'intention malicieuse est la seule différence entre les deux).

La responsabilité civile du dentiste, comme celle du médecin, est-elle contractuelle ou délictuelle? Chez nous, la jurisprudence et la doctrine penchent en faveur de la responsabilité délictuelle.⁽¹⁵⁾ C'était le cas en France jusqu'en 1936, mais, depuis cette date, on tient à bon droit que la responsabilité médicale est contractuelle. La discussion de ce problème n'est pas purement académique; ainsi le délai de prescription et les règles de la preuve ne sont pas les mêmes dans les deux cas.

Heureusement le problème est tranché à l'égard des dentistes sur ces deux points. D'abord au point de vue prescription, l'article 152 (le dernier article) de la loi des dentistes précise que:

"Tout recours en dommages contre un membre du collège en raison d'une faute délictueuse ou contractuelle commise dans l'exercice de sa profession, doit être exercé, sous peine de déchéance, dans un délai de deux ans à compter de la commission de cette faute." (1948, 12 Geo. VI, c. 33).

Ce texte règle donc pour les dentistes un problème juridique qui n'est pas encore définitivement réglé pour les médecins. Le délai de prescription est fixé à deux ans, alors que dans les cas de responsabilité contractuelle ordinaire la prescription est de 30 ans (art. 2242). Quant à la responsabilité délictuelle, dans les cas ordinaires elle est d'un ou de deux ans selon qu'on réclame des dommages causés à la personne ou aux biens. Donc, à ces trois différents délais de prescription, la loi des dentistes substitue un délai unique, uniforme.

Quant au problème de la preuve, il est réglé par la jurisprudence. En matière contractuelle, le défendeur qui n'a pas exécuté son contrat est obligé de prouver que l'inexécution ne lui est pas imputable. C'est donc lui qui supporte le fardeau de la preuve. Tandis qu'en matière de délit, c'est au demandeur de prouver la faute du défendeur.

Voici comment on a contourné la dif-

ficulté quant aux médecins et dentistes. En matière contractuelle, le dentiste défendeur est obligé de justifier l'inexécution de son contrat, mais il faut tout de même que le demandeur prouve l'inexécution. Que l'état d'un malade ait empiré, cela ne prouve pas que le dentiste n'a pas exécuté son contrat, car l'obligation du dentiste, comme celle du médecin, est une obligation de moyens; non une obligation de résultat. Dans son contrat médical, le dentiste promet à son patient non pas de le guérir, mais de prendre tous les moyens à sa disposition pour lui prodiguer des soins appropriés. Pour prouver que le dentiste n'a pas exécuté son obligation, le patient est donc tenu de prouver qu'il n'a pas utilisé les méthodes que tout dentiste suffisamment instruit de son art aurait utilisé, ou qu'il n'a pas appliqué ces méthodes avec une habileté ou une diligence raisonnable. En d'autres termes, le patient est obligé de prouver la faute du dentiste, tout comme s'il invoquait la responsabilité délictuelle du défendeur. Passons à la responsabilité du dentiste puisque c'est celle-là qui pour le moment a les faveurs de notre jurisprudence et que de toute façon nous admettons chez nous le cumul des deux recours.

La responsabilité délictuelle du dentiste a trois sources principales:

1. sa faute personnelle
2. la faute de ses auxiliaires dont il est censé avoir le contrôle.
3. le fait des choses, instruments ou appareils dont il a la garde.

SA FAUTE PERSONNELLE.

Comme "toute personne capable de discerner le bien du mal" (art. 1053), le dentiste répond des dommages causés par sa faute. S'il se met en colère contre un patient trop plaignard et lui administre une raclée, il peut s'attendre à payer les dommages. Ce n'est pas ce genre de faute qui nous intéresse particulièrement, c'est plutôt la faute médicale, l'exercice fautif de l'art dentaire, ce que les anglais appellent "malpractice".

Le dentiste commet une faute médicale (ou faute professionnelle) quand il exerce

sa profession sans la science, la prudence, la diligence et l'habileté qu'on est en droit de s'attendre de lui.

Il ne faut pas soutenir que la moindre erreur de diagnostic, le moindre faux geste dans une intervention chirurgicale entraîne sa responsabilité. Pareille théorie paralyserait la science dentaire, en tenant les dentistes sous la crainte d'une responsabilité impossible à éviter. On ne peut exiger du dentiste qu'il soit infailible: il y a des erreurs de diagnostic, des erreurs de traitement qui n'entraînent pas sa responsabilité.

Il ne faut pas prétendre non plus que seule la faute grossière, la faute que n'aurait pas commise un étudiant de première année en art dentaire, entraîne la responsabilité civile du dentiste.

La vérité est entre ces deux théories extrêmes. La faute, qui rend une personne responsable des dommages causés, est celle que n'aurait pas commise ce que l'on appelle en droit "un bon père de famille". Dans le cas présent, c'est la faute que n'aurait pas commise un dentiste suffisamment instruit de son art et normalement diligent et habile.

Ce critère de la faute médicale, il appartient au juge d'en faire l'application aux faits concrets de chaque espèce. Il est impossible de donner une liste de faits précis constituant une faute médicale entraînant la responsabilité. Les circonstances dans lesquelles le dentiste a prodigué ses soins varient et le tribunal doit en tenir compte. On ne peut exiger d'un dentiste ou d'un médecin la même préparation, la même présence d'esprit, la même maîtrise de ses gestes quand il doit opérer la nuit pour un cas d'urgence; on sera moins exigeant en pareil cas sur le choix de l'instrumentation, surtout si on est dans un endroit éloigné des grands centres.

En examinant la jurisprudence on peut toutefois affirmer que, dans des circonstances normales, certains faits constituent une faute médicale, entraînant la responsabilité du dentiste:

1. Le fait de ne pas empêcher une dent, un chicot ou un tampon d'aller se

loger dans la trachée ou le poumon d'un patient.^(19,20)

La Cour suprême du Canada, dans une cause ontarienne a reproché à un dentiste de n'avoir pas compté les tampons ("swabs") qu'il avait mis dans la bouche de son patient, alors que l'un des tampons oubliés est allé obstruer la trachée et a causé l'asphyxie.^(21,22)

V. Nesbitt

1 D. L. R. 671, ou

1 S. C. R. 143

2. Le fait de n'avoir pas pris les précautions nécessaires pour prévenir une infection à la suite d'une extraction de dent.⁽²³⁾

Cependant, il ne faut pas croire que le dentiste est responsable de toute infection causée par une extraction de dent si le dentiste a pris les précautions ordinaires.^(21,25)

En France, on admet aussi que le contrat médical impose au dentiste une obligation de moyens, plutôt qu'une obligation de résultat. Cependant, dans une affaire récente, on a décidé que si le dentiste fournit un appareil de prothèse, il garantit que cet appareil est au moins objectivement satisfaisant, de sorte qu'il y aurait dans ce cas une obligation de résultat.⁽²⁶⁾

Si cette décision indique une nouvelle tendance, je souhaite qu'elle ne soit pas suivie par nos tribunaux. Il ne faut pas que le dentiste soit considéré comme un marchand, vendeur d'appareils de prothèse à l'essai. Les règlements du Collège interdisent même au dentiste d'annoncer la garantie de ses opérations ou travaux dentaires (art. 36 par. d). Il y a donc pas lieu de présumer que le dentiste a garanti à son patient que son appareil de prothèse lui donnerait entière satisfaction.

Le médecin ne répond pas seulement de sa faute personnelle, il répond aussi de la faute de ses auxiliaires qui l'assistent dans l'exercice de sa profession.

Cette responsabilité à raison du fait d'autrui existe aussi bien en matière de contrat qu'en matière de délit. Au point de vue responsabilité contractuelle, peu importe que le dentiste fasse tout le

travail lui-même ou qu'il se fasse aider, ce qui le rend responsable des dommages, c'est l'inexécution du contrat. Le dentiste ne pourra pas dire "l'alliage avec lequel j'ai obturé votre dent a été préparé par mon assistante, s'il est défectueux, ce n'est pas ma faute". Si le travail d'obturation pour une raison quelconque n'a pas été fait, comme l'exige le contrat médical, selon les règles de l'art, le dentiste en est contractuellement responsable. (Dans ce domaine il faut appliquer sans hésiter le brocart "qui facit per alium, facit per se".)

Au point de vue délictuel, la responsabilité du dentiste repose sur l'article 1054 du Code civil:

"... Les maîtres et les commettants sont responsables du dommage causé par leurs domestiques et ouvriers dans l'exécution des fonctions auxquelles ces derniers sont employés."

Malgré que notre code emploie les mots "domestiques et ouvriers", nos tribunaux étendent le principe à tous les "préposés" selon l'expression de l'article 1384 du Code civil français (Nadeau no 404). Selon cette interprétation, il faut donc conclure que, même au point de vue délictuel, le dentiste est responsable des actes fautifs de son infirmière dans l'exécution de ses fonctions.

Cette responsabilité professionnelle délictuelle, à raison du fait d'autrui, ne s'étend qu'aux auxiliaires soumis au contrôle du dentiste, selon l'expression de l'article 1054 al. 1er. Seul l'auxiliaire à qui le dentiste peut donner des instructions précises sur la façon de procéder engage la responsabilité délictuelle du dentiste. Un médecin anesthésiste exerce sa profession sans avoir à recevoir des instructions de qui que ce soit sur la façon de procéder. Son acte fautif n'engagera donc pas la responsabilité délictuelle du dentiste.

La loi des dentistes fait une application particulière de ce principe général de la responsabilité du professionnel pour l'acte de son auxiliaire. L'article 85-A de cette loi (1950, 14 Geo. VI c. 69) vous dit que le dentiste licencié peut prendre à son bureau un dentiste gradué non licencié

pour lui faire exercer sa profession *sous sa direction*. La loi exige que le dentiste licencié signe un écrit par lequel il se rend responsable des actes du dentiste non licencié dans l'exercice de sa profession.

A mon avis, c'est là une précaution inutile du point de vue juridique, malgré l'utilité psychologique qu'elle peut avoir. Puisque le dentiste non licencié doit exercer *sous la direction* du dentiste licencié, il engage nécessairement la responsabilité de ce dernier.

L'article 151 de la loi des dentistes (ajouté en 1948 par 12 Geo. VI c. 33 art. 15) permet aussi au dentiste d'utiliser les services de techniciens privés; mais la loi dit bien que le dentiste

"eut . . . confier aux auxiliaires de son choix, sous sa direction immédiate et sous son exclusive responsabilité, l'exécution de la partie strictement manuelle de la technique dentaire. . ."

Les dentistes associés sont des auxiliaires les uns des autres. Mais comme aucun n'est le préposé de l'autre, le principe de la responsabilité délictuelle établie par l'article 1054 ne tombera-t-il pas? Aucun de nos auteurs n'étudie la responsabilité professionnelle à raison du fait d'un dentiste ou médecin associé, et notre jurisprudence n'a pas eu, que je sache, l'occasion de se prononcer là-dessus (Voir cependant, Proc. gén. du Canada v. Dallaire 1949 B.R. 365 où la question est posée). Cependant, l'interprétation des articles 1856 et 1731 C.c. me portent à croire que les associés sont solidairement responsables des dommages causés par la faute de l'un d'eux.

La troisième source de la responsabilité quasi-délictuelle du dentiste résulte du dommage causé par les choses dont il a la garde.

ARTICLE 1054

"Elle est responsable non seulement du dommage qu'elle cause par sa propre faute, mais encore de celui causé par . . . les choses qu'elle a sous sa garde."

L'instrumentation médicale a fait des progrès énormes. Mais si les appareils se sont perfectionnées, ils se sont aussi multipliés et, pour un dentiste, la responsabilité du fait de ses instruments est assez onéreuse.

Disons tout de suite qu'il ne s'agit pas du dommage causé par le dentiste ou son préposé en maniant un instrument de façon maladroite. Car, sur ce point, le droit de la Province de Québec se sépare nettement du droit français. Une aiguille ou un bistouri mal dirigé par le dentiste cause-t-il des dommages, on dira que le dommage est dû non pas au fait de la chose mais à la faute personnelle du dentiste dont l'instrument ne fait que prolonger et perfectionner le geste.

Mais si un engin dentaire fait explosion ou se brise pour une cause inexpiquée et blesse un patient, c'est alors que, dans notre droit, nous parlerons de responsabilité provenant du fait autonome de la chose ou découlant de la garde de la chose.

La responsabilité résultant du fait de la chose n'est pas une responsabilité absolue. Le dentiste pourra s'en dégager en prouvant qu'il ne pouvait pas prévenir l'accident par des moyens raisonnables.

On m'avait demandé de parler des dentistes devant la loi. Je me suis contenté de mettre une partie de la loi devant les dentistes. Si maintenant vous désirez discuter des quelques problèmes soulevés ou d'autres problèmes juridiques voisins, je demeure à votre disposition.

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ÉDITORIAL

La bibliothèque de l'A. D. C.

Dans son rapport annuel de mai dernier au Bureau des Gouverneurs de l'Association dentaire canadienne, le conservateur de la bibliothèque mentionne que ses rayons contiennent 1500 volumes reliés traitant de science dentaire.

Les volumes, certes, constituent la valeur essentielle d'une bibliothèque, mais des périodiques arrivés de tous les coins du monde et rédigés dans presque toutes les langues contemporaines renforcent aussi essentiellement les services qu'elle rend à ses "clients".

La bibliothèque de l'A.D.C., abritée dans l'édifice du secrétariat de l'A.D.C., a été fondée en 1950 grâce à une campagne de souscription lancée à cette époque auprès des membres de l'Association.

Les progrès qu'elle a réalisés depuis cinq ans sont étonnants, si on songe que les volumes dont elle dispose sont de publication récente; elle n'a pas voulu charger ses rayons de bouquins désuets et n'ayant qu'un intérêt historique; elle a voulu être un centre de consultation moderne et pratique, sachant fort bien que la valeur historique de ses volumes viendrait fatalement avec l'accumulation des années!

La bibliothèque de l'A.D.C., avec l'aide de dons en argent que lui offre constamment des dentistes canadiens, achète à peu près tous les livres de sciences dentaires au fur et à mesure de leur parution. Les frais de son administration sont défrayés par le budget général de l'Association, qui a retenu les services permanents d'une bibliothécaire qualifiée.

En outre, la bibliothèque reçoit presque tous les périodiques dentaires publiés dans les différents pays de l'univers.

C'est dire que notre bibliothèque peut fournir à ses membres toute la littérature dont ils peuvent avoir besoin pour leur amélioration personnelle, pour leur renseignements, pour leurs travaux bibliographiques, pour des conférences qu'ils ont à préparer, etc. . . .

La bibliothèque de l'A.D.C., suivant en cela l'esprit de la constitution de l'Association et l'esprit régnant au Canada, est *bilingue*, c'est-à-dire qu'elle se procure indistinctivement des volumes écrits en français et en anglais selon leur contenu et selon la date de leur publication; elle reçoit aussi toutes les revues rédigées en langue française en France, en Belgique, en Suisse et dans les colonies.

La bibliothèque de l'Association est donc bien outillée et elle est appelée à rendre de grands services aux dentistes canadiens des deux langues. Elle a déjà publié deux catalogues de ses richesses bibliographiques et elle annonce de temps à autre ses acquisitions récentes dans le Journal.

Notre bibliothèque est notre seul centre de documentation dentaire où les dentistes canadiens ont accès; nos universités, il est vrai, possèdent leurs bibliothèques, mais

celles-ci sont d'abord à l'usage des corps professoraux et des étudiants; elles n'ont pas de service de circulation comme la bibliothèque de l'A.D.C.

Un relevé des prêts, entrepris ces mois derniers, montre que les dentistes de la province de Québec n'utilisent pas beaucoup ses disponibilités, surtout les dentistes de langue française. Et pourtant, quand il s'est agi de fonder la bibliothèque nationale, un groupe de confrères de langue française ont insisté pour qu'elle contienne des volumes et qu'elle s'abonne à des revues d'expression française! Nous invitons donc tous les dentistes à se prévaloir de leur titre de membres de l'Association et d'emprunter des livres et des revues à notre centre de documentation.

Qui peut emprunter des volumes et des revues?

Tous les dentistes canadiens, qui sont membres de l'Association et tous sont membres.

Que faut-il faire pour emprunter des livres?

Il suffit d'écrire à la bibliothèque de l'Association, à 234 rue St-Georges, Toronto, et de mentionner le titre et l'auteur des ouvrages qu'on désire emprunter. Ces ouvrages vous sont expédiés par la poste; vous pouvez les garder pour 15 jours; si au bout de cette époque, vous désirez les conserver plus longtemps, vous avertissez la bibliothèque et les volumes sont automatiquement prêtés pour un autre 15 jours.

Comment connaître les volumes dont dispose la bibliothèque?

En demandant le catalogue le plus récent de la bibliothèque.

Que coûte ce service de circulation?

Absolument rien; votre titre de membre vous accorde le privilège d'être abonné à la bibliothèque; l'Association paie les frais de poste de l'envoi et vous payez les frais de retour.

Nous encourageons nos confrères à emprunter des ouvrages à la bibliothèque de l'Association; en ce faisant, vous rendez service à vous-même et vous aidez ceux qui donnent de leur temps au progrès et au développement de la bibliothèque; surtout vous justifiez l'attitude de ceux qui ont réclamé des livres français pour notre bibliothèque nationale.

GERARD DE MONTIGNY

Nouveau journal dentaire

L'Association dentaire américaine publiera en janvier 1956 le premier numéro d'une revue intitulée "Dental Abstracts".

Cette revue renfermera des résumés d'articles tirés de toutes les revues dentaires du monde entier et aussi de revues scientifiques connexes à la dentisterie. Selon le docteur Lon W. Morrey, rédacteur des publications de l'Association dentaire américaine, ce journal permettra au dentiste de se rendre compte en peu de temps des progrès réalisés en science dentaire dans toutes les parties de l'univers. Quoique chaque résumé contienne l'essence de tout l'article original et fournisse au lecteur tous les renseignements qu'il renferme, le résumé ne peut se substituer à l'article complet; pour obtenir des données plus détaillées, le lecteur intéressé par un résumé devra consulter l'article original ainsi que les graphiques, les illustrations, les tableaux et autres explications, qui l'accompagnent dans son journal d'origine.

Au 1er août déjà, 24 pays avaient envoyé des abonnements venant de dentistes exerçant leur profession, de chercheurs, d'étudiants, de professeurs, de techniciens, de bibliothèques d'hôpitaux, d'universités, de laboratoires, de fondations et de manufacturiers d'appareillages dentaires.

Le prix de l'abonnement, à l'extérieur des Etats-Unis est de \$7.00, par année, payables d'avance en fonds américains. On s'adresse à: "Dental Abstracts", Association dentaire américaine, 222 East Superior Street, Chicago 11, Illinois, U.S.A.

Congrès annuel
de
l'Association dentaire canadienne
et de
l'Association dentaire d'Alberta
à l'Hotel Banff Springs, Banff, Alberta
les 3, 4, 5 et 6 juin 1956



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Auréomycine + U.V. et gingivites

Dans le but d'augmenter l'action de l'auréomycine dans le traitement des gingivites, Hohlfeld (Schweiz. Mschr. Zshnh., oct. 1954) a eu l'idée de recourir à quelques séances d'ultra-violet qui agissent en enlargissant la lumière des vaisseaux et en augmentant la phagocytose.

La technique est la suivante:

Après une première séance de détartrage minutieux, on procède, dans une deuxième séance, à une irradiation U.V. à l'aide d'un bâton de quartz appliqué le long des maxillaires. Puis le malade se rince la bouche; on fait un rinçage à l'eau oxygénée, on sèche et on applique une pâte à l'auréomycine. Cette pâte est introduite dans tous les interstices possibles et on recouvre le tout d'un ciment qu'on laisse durcir pendant quelques minutes. Le malade enlèvera lui-même son pansement au bout de trois à quatre heures.

Les séances sont renouvelées tous les deux ou trois jours. D'une façon générale 4 à 5 séances suffisent pour venir à bout des gingivites importantes.

Nouvelles de l'Association

Octrois du Ministère de la santé nationale pour fins dentaires

Les dentistes, en général, ne réalisent pas les sommes d'argent qui ont été consacrées à la dentisterie depuis 1948 par des octrois de santé nationale. Le Ministère a consacré environ \$2,000,000 à des programmes d'hygiène dentaire destinés aux enfants; il a octroyé quelques \$323,555. à des programmes dentaires dans les sanatoria et les asiles d'aliénés. Ces argents ont été dépensés en faveur de la dentisterie et, sans eux, les

programmes qui ont été réalisés n'auraient pas eu lieu. Il faut noter que le Ministère a fait des octrois là où ils étaient le plus nécessaire. Les résultats obtenus sont probants et mettent en valeur la ligne de conduite tenue par le Ministère de la Santé nationale et du Bien-Etre social. Des sommes équivalentes auraient pu être dépensées sans produire des effets aussi évidents. Les deux tableaux suivants indiquent les sommes octroyées aux diverses provinces.

TABLEAU I

Octrois du Ministère de la Santé nationale pour des programmes d'hygiène dentaire destinés aux enfants: 1948-1955

	salaires	frais de voyage	équipement et fournitures	formation de personnel	total
Territoires du Nord-Ouest	\$ 6,832	\$ 355	\$ 4,969	.....	\$ 12,156
Colombie britannique	356,290	32,865	95,948	12,505	497,608
Alberta	23,449	208	7,927	8,093	39,677
Saskatchewan	187,809	45,395	105,649	36,318	375,171
Manitoba	16,180	8,540	14,014	.....	38,734
Ontario	285,851	27,310	64,151	26,335	403,647
Québec	62,871	.....	8,791	18,000	89,662
Nouveau-Brunswick	67,685	4,149	9,659	8,079	89,572
Nouvelle-Ecosse	70,708	10,001	13,667	10,669	105,045
Ile-du-Prince-Edouard	73,598	8,350	18,113	17,226	117,287
Terre-Neuve	54,552	2,335	38,600	.....	95,487
	\$1,205,825	\$139,508	\$381,488	\$137,225	\$1,864,046

TABLEAU II

Octrois du Ministère de la Santé nationale pour des programmes de traitements dentaires dans les sanatoria et les asiles d'aliénés 1948-1955

	équipement	salaires	total
Colombie britannique	\$ 20,055	\$ 16,770	\$ 36,825
Alberta	6,735	14,460	21,195
Saskatchewan	2,885	.....	2,885
Manitoba	1,384	27,739	29,123
Ontario	23,008	13,320	36,328
Québec	36,468	75,750	112,218
Nouveau-Brunswick	4,567	34,160	38,727
Nouvelle-Ecosse	3,227	.....	3,227
Ile-du-Prince-Edouard	1,557	.....	1,557
Terre-Neuve	2,024	39,446	41,470
	\$101,910	\$221,645	\$323,555

Parabole des guérisseurs

"Il était une fois un pays où les guérisseurs s'étaient groupés en association; et cette association était puissante, parce que

tous les habitants du pays avaient une grande vénération pour des guérisseurs. Et on disait même que ce syndicat était le plus fort de tout le pays. Ce n'était pas facile de

devenir membre de cette union — seuls les plus savants pouvaient y entrer; on devait travailler pour rien durant huit longues années, même à titre d'apprenti, et ceux qui aspiraient à devenir des maîtres dans le métier devaient travailler cinq années additionnelles et y recevoir une maigre pitance. Et enfin, quand leur valeur était reconnue, ils pouvaient besogner tous les jours aussi longtemps que leurs forces le leur permettaient. Et ceux dont la réputation s'étendait à l'extérieur du pays payaient un tribut assez élevé au percepteur d'impôt. Mais à cause des lois d'impôt et à cause du genre de vie qu'ils devaient mener en leur qualité d'artistes, on ne parlait jamais de leurs affaires sur la place publique."

Un bon jour, les politiciens dirent au peuple: "Pourquoi chacun doit-il payer pour se faire soigner? L'Etat devrait s'occuper de cela, et exercer un contrôle sur les guérisseurs." Et parce que plusieurs électeurs croyaient qu'ils obtiendraient quelque chose pour rien, on passa une loi. Mais les choses ne finirent pas très bien. Ces guérisseurs, qui appartenaient à un fier syndicat, se mirent en colère: "N'avons-nous pas durant d'innombrables années soigné les pauvres pour rien? Et notre groupe ne travaille-t-il pas pour tous, pour des mensualités assez restreintes? Et devons-nous maintenant courber l'échine devant les serviteurs de l'Etat, qui n'entendent rien à nos coutumes, qui sont remplis de l'insolence de leur charge, qui connaissent les roueries des lois et qui sont gonflés de notre avoir?"

Et les plus grand et les plus savants de ces guérisseurs secouèrent leurs pieds de la poussière de ce pays et partirent. Ceux qui restèrent se dirent les uns aux autres: "Si nous devons travailler pour l'Etat, sans recevoir d'égard pour notre mérite, nous le ferons à la façon des autres serviteurs de l'Etat, avec le même empressement et avec des heures bien définies; et ainsi, par Esculape, nous ne nous foulerons pas les méninges et vous vivrons plus vieux." Et depuis cette minute, l'excellence du travail s'en ressentit, mais les diplômes se multiplièrent. Et les fils des guérisseurs choisirent d'autres carrières.

Découpage du *Winnipeg Tribune* — 28 septembre, 1955 F. G. A.

Nouvelles

—Vincenzo Guerini, un historien dentaire de renom, est décédé à Naples, le 19 mai dernier. Il avait près de 96 ans.

—Alfred Grsi, de Zurich, Suisse, un prothésiste de réputation internationale, a célébré son 90ème anniversaire de naissance, le 31 août dernier.

—H. Parker Buchanan, secrétaire de l'Association dentaire britannique, a passé trois jours au secrétariat de l'A.D.C., alors qu'il était en route pour le congrès de l'Association dentaire américaine, à San Francisco. Il a été fait membre honoraire de l'A.D.A.

—Trente-deux nations, comprenant des pays aussi lointains que le Japon, la Nouvelle-Zélande, Malaya, l'Argentine étaient représentées à la réunion annuelle de la Fédération dentaire internationale, à Copenhague, du 14 au 20 août 1955. Il y avait 142 dentistes des Etats-Unis.

—La ville de St-Louis (population: 868,500) a commencé à fluorurer son eau, le 28 septembre dernier.

—M. Howard Majerison, directeur de la clinique Forsyth pour enfants, est décédé subitement à Boston, le 24 septembre.

—"Dental Abstracts", une nouvelle publication mensuelle de l'Association dentaire américaine fera son apparition en janvier 1956. Le prix d'abonnement au Canada est de \$7.00, par année.

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